

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 638.—VOL. XVII.

LONDON, SATURDAY, NOVEMBER 13, 1847.

[PRICE 6D.]

HYDE AND HOUGHTON COLLIERIES.

IMPORTANT SALE OF COLLIERY ENGINES AND UTENSILS.
TO BE SOLD, BY AUCTION, by Mr. T. M. FISHER, on Wednesday, Thursday, and Friday, the 24th, 25th, and 26th days of November, 1847, at the HYDE and HOUGHTON COLLIERIES, near MANCHESTER, in consequence of the expiration of the lease, and the owners declining the business. Sale to commence at Eleven o'clock each day. All the highly valuable PLANT and MACHINERY, which is in perfect condition, and the most effective in the trade, comprising hand-gear CONDENSING STEAM-ENGINE, cylinder 22-in. diameter, 4-ft. stroke; portable slide valve condensing ditto, cylinder 22-in. diameter, 2-ft. 6-in. stroke; hand-gear condensing ditto, cylinder 27-in. diameter, 5-ft. stroke; hand-gear condensing ditto, cylinder 34-in. diameter, 6-ft. stroke, with metallic piston; and single acting hand-gear lifting ditto, with double beam, cylinder 48-in. diameter, 7-ft. stroke, all in the best possible condition; wagon-shaped steam-boiler, 14 ft. by 6 ft.; two ditto, each 15 ft. by 5 ft.; one ditto, 20 ft. by 6 ft.; one ditto, 20 ft. by 6 ft.; one ditto, 17 ft. 9 in. by 9 ft.; cylindrical fused ditto, 20 ft. 9 in. by 5 ft. 9 in.; ditto, 20 ft. 9 in. by 6 ft. 6 in.; air-pump, 18 in. diameter, 6 ft. stroke; with cycloidal driving gear; two ditto ditto, each 27-in. diameter, 4 ft. stroke; one ditto 27-in. diameter, 5 ft. stroke; one ditto, 27-in. diameter, 4 ft. 4 in. stroke; and one ditto, 30-in. diameter, 3 ft. stroke; all with metallic piston, regulating valves and gauges; wrought-iron air vessels, 7-ft. diameter, 16 ft. deep; four pneumatic winding engines, each with two oscillating cylinders, 12-in. diameter, 2 ft. stroke, and winding gear; one side valve ditto, cylinder 16-in. diameter, 3 ft. 6 in. stroke; 13,900-gallon cast-iron air-tight water tanks, each with copper float, valves, and gearing; winding apparatus, with strong well fitted head gearing, flat ropes, and fittings; pump trees, 9-in. bore, with 8-in. working barrels, foot-pieces, clack-pieces, and connecting-rods; 1,800 yards of ft. pipes, 4, 5, 6 in. diameter; wrought-iron conducting-rods; two machines, with double friction cases for reversing and working the endless chain or winding apparatus; hydraulic proofing machine for pipes; spar and beryl gearing; many tons of wrought-iron; pit rails, 6 ft. and 4 ft. long, about 17 lbs. to the yard; cast-iron ditto, 8 ft. and 4 ft. long, 31 lbs. to the yard when new; winding chain, made of 1-in. Low Moor iron, 220 yards long; ditto 240 yards long; a large quantity of 1-in. and 1-in. ditto, of various lengths; set of boring rods for 60 yards, with bite, shell's, auger heads, and rammers; Davy's safety-lamps; several sets of blasting tools; cast-iron point-plates and landing tables; three large wrought-iron water buckets; about 160 ft. load tubes; cast-iron steel-yard; capital nearly new weighing machine, up to five tons, by Steel, of Burnley; 12½-ton coal wagons; 5-ton boats; capstan, ropes, chains, 800 yards long, with cast-iron rails and stone sleepers, smiths' tools, wrought, cast, and scrap-iron; joiners' benches and tools, circular saw, with bench and driving gear; counting-house fixtures, and other effects.

May be viewed on Monday and Tuesday, the 23rd and 24th of November, and catalogued on the premises, or before, on application to the Auctioneer, 31, Princes-street, Manchester.

FOR SALE, BY PRIVATE CONTRACT.—A single-acting PUMPING-ENGINE—cylinder 30-inch diameter, 9-inch stroke, equal beam, with 7-ton boiler, cistern, spring beam, and first set of rod-shafts attached, being the engine of Wheal St. Clear.—For particulars, apply to Capt. Osborne, Liskeard; Mr. West, engineer, St. Blazey; or Mr. Rendle, the parson, 13, Octagon, Plymouth.

FOR SALE, a 70-inch cylinder ENGINE, without boilers.—For price, and further particulars, please apply to Samuel Gross, Esq., engineer, Wall, Gwinnar, Camborne.

STEAM-ENGINES.—From 8 to 20-horse power ENGINES ALWAYS IN STOCK.

Apply to Mr. CAPPER, Engine-Maker and Founder, BIRMINGHAM.

Price—£12 to £16; with boiler, £33 per horse.

STRONG MIXING PIG-IRON.—The YSTALYFERA IRON COMPANY beg to solicit ORDERS for their ANTHRACITE PIG-IRON. This iron mixes well with Scotch pig—imparting to it strength and elasticity, and remaining in it a portion of its softness and fluidity. No. 3 Pig is recommended for mixing with soft iron—Nos. 1 and 2, for machinery castings, requiring great soundness and strength. At this period, when cast-iron is so much employed in the construction of bridges and other buildings, requiring all the strength and elasticity which the best mixture of metal will afford, it may be interesting to call attention to the characteristics of ANTHRACITE PIG-IRON, as narrated on by that great practical authority, the late DAVID MURRAY, Esq., M.I.C.E.:

"It greatly exceeds, in strength, in defective powers, and capacity to resist impact, any iron at this time manufactured in the United Kingdom."

"It now only remains for me to mention a property peculiar to this iron, which was noticed at the time I made the trial experiments, four years ago, but which has been more fully developed in those more recent made. The property referred to is one of great springiness, or elasticity, which communicates a tendency to the bar, in defecting and breaking, to resume its rectangular form. Bars that had obtained a permanent set of 2-10ths, when afterwards broken, presented but a slight deviation from a right line; and, in no case, did the curvature exceed one-fourth of a tenth."

"It was also remarked, that most of the fractures, in breaking, presented a regularity of form throughout, resembling the structure of sub hardened steel."

Address THE YSTALYFERA IRON COMPANY, Near NEATH, SOUTH WALES.

Dated June 22, 1847.

HOT-BLAST WITHOUT COAL, LABOUR, OR REPAIRS.

Apply for particulars, or to inspect the process in operation on six blast-furnaces, J. Palmer Budd, Esq., Ystalyfera Iron-Works, near Neath.

Dated June 22, 1847.

PATENT GALVANISED IRON COMPANY.—

INCORPORATION OF COMPANY WITH POWERS TO HOLD LANDS, TO RAISE MONEY BY LOAN, AND TO PURCHASE LETTERS PATENT.—Notice is hereby given, that APPLICATION is intended to be made to PARLIAMENT, in the ensuing session, for leave to bring in a bill to incorporate a company by the name of the Patent Galvanised Iron Company, for carrying into effect the purchase and taking on lease, and the working of opened and unopened mines, yielding iron, ironstone, or other metals; coal, culm, or other minerals or mineral produce, and the smelting manufacture, and sale thereof, and for coating, covering, or galvanising iron with zinc or other metals, and for the general purchase and sale of iron and coal, coke, and other produce; and to enable the company so to be incorporated to purchase by agreement, and to take and hold lands, tenements, and hereditaments, and all rights and interests therein, for the purposes of their undertaking, and to resell, lease, or otherwise dispose of such lands, tenements, and hereditaments, or such part or parts thereof as may become unnecessary for the purposes of the said undertaking; and also to enable the said company to raise money by shares, loan, or mortgage; and also to enable the said company to become the purchasers of the following letters patent—that is to say: certain letters patent dated 29th day of April, 1837, granting unto Henry William Russell, his executors, administrators, and assigns, the sole use of an invention of "An improvement in coating or covering iron and copper for the prevention of oxidation," within England, Wales, and the town of Berwick-upon-Tweed, and also in all his Majesty's colonies and plantations abroad; and certain other letters patent, dated the 9th day of May, 1838, granting unto Pierre Armand Lecomte de Fontenaymoreau, his executors, administrators, and assigns, the sole use of an invention of "An improved method of preventing the oxidation of metals, within England, Wales, and the town of Berwick-upon-Tweed, and also in all her Majesty's colonies and plantations abroad, and to enable the said patent, and each of them, or the person or persons to whom the said several letters patent shall be respectively vested, to sell and assign the same to the said company; and also, to enable the said company to become the purchasers of any other letters patent for the sole use of any invention in coating or covering iron and copper, for the prevention of oxidation, or of any other invention or inventions relating thereto; and to enable the patentees of any such invention or inventions, or the person or persons in whom the same shall be vested, to sell and assign the same to the said company. And also, to empower the said company to purchase and take an assignment or assignments of any partial or other interest or interests, license or license, in or under the said letters patent; and also, to enable the said company to grant licenses, make use of, exercise, and vend, such inventions and improvements; and also, to enable the said company to sell, or otherwise dispose of, the privileges granted by such letters patent, as aforesaid, or any part thereof, or interest therein respectively, and, in which said bill will also be inserted, the powers and provisions usually inserted in bills of a similar description, and such other powers, rights, and privileges as may be deemed necessary for carrying into effect the purposes aforesaid.

Dated the 4th day of November, 1847.

GOODWIN, PARTRIDGE, WILLIAMS, and EDWARDS,

Walsrode House, Walsrode, solicitors for the Mill.

THE PATENT SAFETY FUSE, FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the SAFEST, CHEAPEST, and most EXPEDITIOUS MODE of carrying this very hazardous operation. From many testimonies to its usefulness, with which the manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S. &c. "I am very glad to hear that my recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should employ my name as evidence of this." Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Camborne, Cornwall.

THE PATENT OFFICE AND DESIGNS REGISTRY, No. 210, STRAND, LONDON.

INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION OF INVENTIONS AND DESIGNS, with Reduced Scale of Fees.

Messrs. F. W. CAMPIN and Co. offer their services, and the benefit of many years' experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with due regard to VALIDITY, ECONOMY, and DISPATCH—assisted by scientific men of repute.

Also in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen.

Application personally, or by letter, to F. W. Campin and Co., No. 210, Strand (corner of Essex-street).

CITY UNION SLATE WHARF, No. 332, WAPPING.—This WHARF, the property of the COOMBE VALLEY SLATE COMPANY, is situated about 100 yards below the upper entrance of the London Docks, and within eight minutes walk of the Thames Tunnel Pier; vessels of 100 tons burthen may come alongside the quay, and the whole is entirely under cover.

The proprietors, in offering the public this site for landing every description of light goods, beg to say, it presents advantages over most other wharfs this side the water, for it is intended as a dépôt for the sale, as well as the landing, of merchandise. By an arrangement with the agents, goods placed here may be offered for sale without removal to any other place, and a market found at a trifling cost, which, in most instances, is attended with considerable delay and expense.

The attention of mine and quarry proprietors (particularly those of the western parts of the kingdom) are earnestly invited to this new mode of trading—the agents, in all cases, acting irrespective of parties by whom supplied. Goods will be charged by the ton for landing, and a trifling charge per month for warehouse room. Sales will be effected by the company's agents on commission, or merchants may appoint their own agents, if they think proper to do so. Spaces will be let off at a fixed rental—payable quarterly—to meet the convenience of private merchants or companies. Several very influential mining and quarry proprietors have already made arrangements to avail themselves of its advantages; and it is fully expected, during the present winter, the whole will be filled up.

A wharf of this kind has long been required—for it is a well-known fact, that many valuable mines in Cornwall, and elsewhere, have ceased to become profitable, in consequence of the proprietors not being able to find a ready market for a great portion of the commodities they produce.

The following are some of the principle articles that will be always on sale:—Slate, slate for roofing, flooring, paving, and slabs of all kinds, manufactured slate in cisterns, cattle troughs, chimney-pieces, cills and copings, stair-cases, mangers, &c., tin, antimony, manganese, lead, barytes, fluor-spur, iron pyrites, ochres, umbers, mineral black, mineral earths, calamine, manufactured colours, white lead, sheet-lead, castings, &c.

For terms of landing and warehousing, and conditions of commission for effecting sales, apply to the company's agents, Messrs. RICHARDSON & CO., at the Wharf, No. 332, High-street, Wapping; or at the office, No. 5, Whitefriars-street, Fleet-street, City.

BY HER MAJESTY'S LETTERS PATENT.

FULLER and DE BERGUE'S VULCANIZED INDIA-RUBBER BUFFERS and BEARING SPRINGS FOR RAILWAY CARRIAGES.—The PATENTEE of this NEW and IMPORTANT INVENTION beg to announce to Engineers, Carriage-builders, and Railway Companies (especially those constructing new lines), that they have now completed their arrangements for SUPPLYING THE VULCANIZED INDIA-RUBBER BUFFERS and DRAW-SPRINGS, for Passenger-Carriges, Wagons, Cattle-Carriges, Engines, Tenders, &c., and are prepared to execute Orders to ANY EXTENT.

On several of the principal Lines these Buffers have now been tried for many months past, under very able superintendence, and with decided success. The patentees, therefore, feel justified in stating, that they are prepared to furnish not only a more efficient Buffer than any hitherto in use, but on terms which will effect a considerable saving to Companies in the first outlay.

Specimens of the various kinds of buffers and draw-springs may be seen, and prices obtained, on application at their offices, No. 9, Arthur-street West, London-bridge, or at their depot, No. 2, David-street, Manchester.

The patentees will also be happy to furnish full information to all communications by letter, together with drawings of the best mode of application.—The attention of Locomotive Engineers is particularly invited to their BEARING SPRINGS FOR ENGINES and TENDERS, the recent trials of which have proved most successful.

IMPORTANT TO RAILWAY AND STEAM NAVIGATION COMPANIES, MANUFACTURERS, AND ENGINEERS.

W. BROTHERTON AND CO.'S

PATENT LUBRICATING FLUID (or Animal Oil) FOR ALL DESCRIPTIONS OF MACHINERY.

W. B. & CO. have the pleasure to state, that the above article is extensively used in her Majesty's Steam Navy, and by several of the principal Steam Navigation and Railway Companies, and is pronounced by them, and by the first practical engineers of the day, to be far better adapted for the purposes of lubrication than any other article hitherto used for such purposes. The Patent Lubricating Fluid is equally applicable for the most intricate and fine pieces of machinery, as for the heaviest bearings of the steam-engine. It is cheaper, much more economical, and cleaner than oil at present in use; is free from arsenic, and calculated to effect a vast saving in the expenditure of working steam powers.

Further particulars can be had, and testimonials seen, by application to the manufacturers, W. BROTHERTON & CO., Hungerford Wharf, Strand, London.

These pipes are made to stand hot-water without injury—are very superior to leather pipes, or the common India-rubber pipes; and, as they do not become hard or stiff in the lowest temperatures, or require any application when out of use, are particularly well adapted for fire-engines.

FLEXIBLE HOSE-PIPES FOR LOCOMOTIVE ENGINES, RAILWAY CRANES, FIRE-ENGINES, GAS, &c.

PATENT VULCANISED INDIA-RUBBER HOSE-PIPES AND TUBING OF EVERY DESCRIPTION.

These pipes are made to stand hot-water without injury—are very superior to leather pipes, or the common India-rubber pipes; and, as they do not become hard or stiff in the lowest temperatures, or require any application when out of use, are particularly well adapted for fire-engines.

FLEXIBLE TUBING, of every description, for gas, chemical purposes, &c.

VULCANISED INDIA-RUBBER WASHERS, all sizes, for steam and hot-water joints, &c.—Sole manufacturer, JAMES LYNE HANCOCK, Goswell Mews, Goswell-road, London.

VIADUCTS AND OTHER RAILWAY WORK.—The attention of Railway Engineers, Architects, and Contractors is particularly directed to the great advantages to be derived from the application of SEYSEL ASPHALTE, as the only impervious and permanent covering for arches and roofs, and lining of reservoirs, gutters, &c. The arrangements of CHARLIDGE'S PATENT ASPHALTE COMPANY enable it to execute works of any extent with the greatest promptitude.

In order to guard against the use of spurious materials, it is important that all applications for works to be executed direct to this company; and, as a further protection, it is suggested that Engineers, Architects, and Contractors, should require a CERTIFICATE from the company that the proper description of material has been used.

Information may be obtained as to all works which have been executed by the company since its establishment in 1838, which will prove that the failure of many works represented to have been done with the genuine material has resulted from the substitution of a spurious one.

I. FARRELL, Secretary, Seysel Asphalte Company, St. Pancras, London.

ELECTRIC TELEGRAPH COMPANY.

LONDON, 345, STRAND, September 1, 1847.

COMMERCIAL TELEGRAPH.

The works of the lines for commercial communications, between the places enumerated below, embracing a SYSTEM OF TELEGRAPHS FOR COMMERCIAL PURPOSES only, and distinct from that reserved for the special use of railways, being so far advanced as to admit of their completion by the commencement of the coming year, the directors think that the time has now arrived, when it becomes their duty to make known the arrangements which they contemplate for the accommodation of the public.

STATIONS WILL BE OPENED, in central situations, in the PRINCIPAL TOWNS, whence MESSAGES and DISPATCHES will be FORWARDED TO, and RECEIVED FROM, all THE OTHER STATIONS of the ELECTRIC TELEGRAPH COMPANY.

In order to give to Merchants, Bankers, Manufacturers, and all connected with trade, the greatest possible amount of information, a ROOM will be RESERVED in each of the COMPANY'S STATIONS for SUBSCRIBERS, in which will be received, tabulated, and exhibited, all Intelligence of Commercial or Public Interest—for instance:

SHIP LISTS from the various Exchanges.

SHARE LISTS from the various Exchanges.

PRICES CURRENT.

STOCK EXCHANGE LISTS.

CORN MARKETS, from the various Towns.

PRICES OF LIVE STOCK, &c. &c.

In LONDON, a CENTRAL STATION, suited to the importance of the metropolis, is in COURSE OF ERECTION, in the immediate vicinity of the Bank and Royal Exchange; in this Station the whole TELEGRAPHIC NEWS of the COUNTRY will be CONCENTRATED, and FORWARDED in EVERY DIRECTION. And here, as in other towns, a ROOM will be RESERVED for SUBSCRIBERS.

The SUBSCRIPTION to these ROOMS will be TWO GUINEAS per annum, paid in advance, which will entitle SUBSCRIBERS to the RIGHT OF ENTRANCE to ALL the SUBSCRIPTION ROOMS of the COMPANY—including the Central Station at London.

The foregoing details some of the advantages of the Commercial Telegraph to subscribers; but the requirements of the public in general will be provided for by the establishment of offices, which will at all times be open for the reception and transmission of messages and dispatches; while messengers will be kept at the various stations, by whom dispatches may be sent out to any part of the town where the communication has been received by Telegraph at the Company's Station.

Subscribers' Names are received at the Commercial Telegraph Office, where any further information may be obtained.

The following are the Towns to which the Commercial Telegraph will be first extended:—

London	Chester	Southampton	Dorby	Darlington
Margate	Liverpool	Winchester	Nottingham	Newcastle
Bangor	Nottingham	Birmingham	Lincoln	Bir

SIR JAMES MURRAY'S FLUID MAGNESIA.—Prepared under the immediate care of the inventor, and established for upwards of 30 years.—This elegant preparation is recommended in all cases of bile, acidity, indigestion, gout, and gravel, as the most safe, easy, and effectual form in which magnesia may—*and* indeed, the only one in which it ought—*to be exhibited*, possessing all the properties of magnesia made in a neutral salt, without being liable, like it, to form dangerous concretions in the bowels, it effectively cures gravel without injuring the coats of the stomach, as soda, potash, and their carbonates are known to do; it prevents the food of infants turning sour; in all cases it acts as a pleasant appetiser, and is peculiarly adapted to females. It has long been known that the most serious consequences have frequently resulted from the use of solid magnesia, which has been proved by Mr. Brände and many other eminent chemists to form concretions in the bowels, endangering, and, in some instances, destroying life.—Sir HUMPHREY DAVY testifies that this solution forms soluble combinations with uric acid salts in cases of gout and gravel—thereby counteracting their injurious tendency, when other alkalies, and even magnesia itself, had failed.

From Sir PHILIP CRAMPTON, Bart., Surgeon-General to the Army in Ireland:—
"DEAR SIR.—There can be no doubt that magnesia may be administered more safely in the form of a concentrated solution than in substance; for this, and many other reasons, I am of opinion that the fluid magnesia is a very *useful* addition to our *Materia Medica*.—PHILIP CRAMPTON."—Sir J. Clarke, Sir A. Cooper, Dr. Bright, and Messrs. Gathorne, and Herbert Mayo, of London, strongly recommend Murray's Fluid Magnesia, as being infinitely more safe and convenient than the solid, and free from the danger attending the use of soda or potash.

Letter from J. Murray, Esq., Lecturer on Chemistry, F.S.A., P.L.S.—

"DEAR SIR JAMES.—Many years have elapsed since you first showed me, in your laboratory, your super-carbonate, or soluble magnesia, and demonstrated experimentally the remarkable quantity of pure magnesia held in transparent solution. It was then new to me, as it was to the chemical world, and I speak advisedly, as a practical chemist. I believe its medical value cannot be too highly estimated; and I am satisfied that the public is under an infinite debt of gratitude to you for these invaluable researches, which have been the means of its introduction. Not to mention its more obvious healing virtues, I believe it to be almost, if not altogether, a specific for lithic acid concretions, when used in the pure condensed solution invented by you.

"Believe me to be your's, faithfully, JOHN MURRAY, F.S.A.

"To Sir James Murray, Dublin.

Portland-place, Hull, Aug. 30, 1839."

The following testimonial of the celebrated "DISTIN FAMILY," who are well known to her Majesty and the nobility of England proves the great value of Sir James Murray's fluid magnesia, and is very encouraging for delicate persons going to sea:—

"Sir.—Having arrived from Glasgow, per the steam-ship *Jupiter*, in this stormy season, without the slightest sea sickness, we feel bound to attribute this exemption to your solution of magnesia and acidulated syrup, which were kindly furnished to us by that attentive officer, Capt. Ellis. Upon all former occasions we were martyrs to sea sickness, and we think it a great blessing that travellers may now enjoy such health and comfort at sea, as we derived from the use of this delightful drink."

"To Sir J. Murray.

Tatnall's Hotel, Dawson-street, Dublin, Feb. 19, 1839."

From Dr. KENNEDY, Master of the Lying-in Hospital, Dublin:—

"DEAR SIR.—I consider the fluid magnesia to be a very valuable and convenient remedy in cases of irritation and acidity of the stomach, but more particularly during pregnancy, scrophularia, infantile diseases, or sea sickness."

In addition to the above, Professor DUNCAN, of Edinburgh, in his extensive practice, established its efficacy for removing acidity—alleviating irritation of the stomach or urinary organs, and for dissolving lithic concretions and uric salts; and, consequently, as the best remedy for gout and gravel.

CAUTION.—In order to avoid the danger of concretions and sediments, which result from the use of over-saturated and unchemical compounds, made by non-medical persons, the public will please to observe, that Sir James Murray's pure fluid magnesia is prepared of that proportion of strength which is conformable to the laws of chemical equivalents, and which has been proved, in hospital and private practice, during the last 30 years, to be the best adapted for the human stomach, and the most suitable for the treatment of females and children.

Sold by the sole consignee, Mr. WILLIAM BAILEY, of North street, Wolverhampton, and all wholesale and retail druggists and medicine agents throughout the British empire, in bottles, 2s., 2s. 6d., 3s. 6d., 5s. 6d., 11s., and 21s. each. The acidulated syrup, in bottles, 2s. each.—N.B. Be sure to ask for "Sir James Murray's Preparation," and to see that his name is stamped on each label, in green ink, as follows:—"James Murray, Physician to the Lord Lieutenant."

On the concealed cause that preys on the health and shortens the duration of human life. Illustrated with coloured engravings.—Just published, in a sealed envelope, Price 2s. 6d., or free by post, 3s. 6d.

CONTROL OF THE PASSIONS: a Popular Essay on the Duties and Obligations of the Married State—the disqualifying impediments and the consequent disappointment of marital anticipations—the physiology, use, and abuse of the passions—irritations of the reproductive organs—with advice to those suffering from excessive indulgence in a secret vice, or from infection; and remarks on diarrhoea, gleet, stricture, and syphilis. Illustrated with coloured engravings and cases. By CHARLES LUCAS & Co., Consulting Surgeons, 60, Newman-street, Oxford-street, London, Member of the London College of Medicine, &c.

CONTENTS OF THE WORK.

Chap. I. Bodily and mental exhaustion induced by indiscriminate indulgence of the passions, illustrated with coloured engravings.—Chap. 2. Baneful results of a secret vice on the mind and body, evidenced in the production of consumption, epilepsy, and other convulsive diseases. Insanity, idiotry, moping melancholy, indigestion, stricture, impotence, and sterility, with observations on the duties of married life, and on the unhappiness caused by unruly unions.—Chap. 3. Debility and exhaustion of the principal vital functions, the nature and treatment of impotence and sterility, and the imperfect performance of the marital act, caused by the practice of self-indulgence.—Chap. 4. Gonorrhoea, its symptoms, complications, and treatment; gleet, stricture, and disease of the prostate.—Chap. 5. Syphilis, and its attendant maladies and treatment. Cases, and concluding observations, plates, &c.

Published by the authors, and sold by Brittain, 54, Paternoster-row; Hannay and Co., Oxford-street; J. Gordon, 146, Leadenhall-street; G. Mansell, 115, Fleet-street; Sanger, 150, Oxford-street; H. Wimball, 78, High-street, Birmingham; H. Whitmore, 119, Market-street, Manchester; J. Howell, 54, Church-street, Liverpool; W. and H. Robinson, 11, Green-side-street, Edinburgh; T. H. Powell, 10, Westmoreland-street, Dublin; and all booksellers.

Persons desirous of obtaining the above work, and not wishing to apply to a bookseller for the same, may, to ensure security, have it despatched from the authors, by enclosing 3s. 6d., or postage stamp to that amount.

At home from Ten till Two, and from Five till Eight. Immediate replies sent to all letters, if on ailing the fee of £1 for advice, &c. &c. 60, Newman-street, Oxford-street, London.

DR. LA'MERT ON THE SECRET INFIRMITIES OF YOUTH AND Maturity, With 40 coloured engravings on steel.

Just published, and may be had in French or English, in a sealed envelope, 2s. 6d.; or post-free, from the author, for forty-two stamps.

SELF-PRESERVATION: A Medical Treatise, on the Physiology of Marriage, and on the Secret Infirmities and Disorders of Youth and Maturity, usually acquired at an early period of life, which enervate the physical and mental powers, diminish and enfeeble the natural feelings, and exhaust the vital energies of Manhood; With Practical Observations on the Treatment of Nervous Debility, whether arising from those causes, close study, or the influence of tropical climates; local and constitutional weakness, syphilis, stricture, and all diseases and derangements resulting from indiscretion; with 40 coloured engravings, illustrating the Anatomy, Physiology, and Diseases of the Reproductive Organs, explaining their various structures, uses, and functions, and the infirmities that are produced in them by solitary habits, excesses, and infection.

BY SAMUEL LA'MERT, M.D., No. 9, BENTWOOD-STREET, BENTWOOD-SQUARE, Doctor of Medicine, Matriculated Member of the University of Edinburgh, Licentiate of Apothecaries Hall, London, Honorary Member of the London Hospital Medical Society, &c.

REVIEWS OF THE WORK.

"The author of this singular and talented work is a legally qualified medical man, who has evidently had considerable experience in the treatment of the various disorders, arising from the follies and frailties of early indiscretion. The engravings are an invaluable addition, by demonstrating the consequences of excesses, which must act as a salutary warning to youth and maturity, and by its perusal, many questions may be satisfactorily replied to, that admit of no appeal, even to the most confidential friend."—*Eva.*

"Unquestionably this is a most extraordinary and skilful work, and ought to be extensively circulated; for it is quite evident that there are peculiar habits required at public schools and private seminaries, and which cannot be too strongly reprobated and condemned. The engravings that accompany the work are clear and explanatory; and being written by a duly-qualified medical practitioner, will, doubtless, be the means of saving many a youth, as well as those of mature age, from the various evil consequences resulting from early indiscretions."—*Magna.*

Sold by Kent and Richards, 52, Paternoster-row; Hannay, 68, Oxford-street; Starke, Titchborne-street, Haymarket; Mansell, 115, Fleet-street; Gordon, 146, Leadenhall-street; and by Strange, 21, Berners-street, Oxford-street, London. Published by the authors; sold by Strange, 21, Berners-street; Hannay, 68, and Sanger, 150, Oxford-street; Starke, 23, Titchborne-street, Haymarket; and Gordon, 146, Leadenhall-street.

THE SILENT FRIEND: a medical work, on the infirmities and decay of the generative system, from excessive indulgence, infection, and the inordinate use of mercury, with remarks on marriage, and the means of obviating certain disqualifications, illustrated by 26 coloured engravings. By R. & L. PERRY & Co., 19, Berners-street, Oxford-street, London. Published by the authors; sold by Strange, 21, Berners-street; Hannay, 68, and Sanger, 150, Oxford-street; Starke, 23, Titchborne-street, Haymarket; and Gordon, 146, Leadenhall-street.

PART THE FIRST treats of the anatomy and physiology of the reproductive organs, and is illustrated by six coloured engravings.—**PART THE SECOND** treats of the consequences resulting from excessive indulgence, and their lamentable effects on the system, producing mental and bodily weakness, nervous excretion, and generative incapacity; it is illustrated by three explanatory engravings.—**PART THE THIRD** treats of the diseases resulting from infection, either in the primary or secondary form, and contains explicit directions for their treatment. The consequences of neglect, and of the abuse, or mercury only, are also clearly pointed out. This section is illustrated by 17 coloured engravings.—**PART THE FOURTH** treats of Perry's Preventive Lotion, by the use of which the dangers of infection are obviated. Its action is simple but sure: it combines with the virus of mercury, and destroys its power on the system.—**PART THE FIFTH** is devoted to the consideration of marriage and its duties. The causes of unproductive unions are also considered, and the whole subject critically and philosophically inquired into.

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THE CRICKET STEAM-BOAT EXPLOSION.

The trial of Heasman, the engineer of the *Cricket* steamer at the time of the unfortunate explosion, which took place on the 21st of August last, has been adjourned, at the instance of the crown, until the next session of the Central Criminal Court. We believe that no bill was sent before the grand jury against him, and that it is on the coroner's inquisition solely, that the matter yet rests. We regret this postponement for many reasons. It was due to the public that no time should have been lost in bringing to a conclusion the investigation into the causes that led to the melancholy accident by which five human beings have been deprived of their lives. It would have been highly desirable that every additional light should have been thrown on the transaction, in addition to the searching inquiry that had already taken place before the coroner, that it might be fully and accurately known, whether there is anything really dangerous in the pecuniary construction of the engines used on board of the halfpenny boats, whether there was any reasonable precaution omitted on the part of the proprietors, and whether, in fact, the same degree of safety is afforded that is to be obtained in the other boats plying on the river, and that the very great accommodation yielded by the company may be made use of without any degree of imminent or forthcoming danger. If there is no safety, means should be taken, without a moment's delay, to obviate the future risks to which passengers may be exposed; but if, on the other hand, nothing really objectionable is to be discovered, that is no extraordinary danger beyond that which must necessarily exist, and which cannot be avoided by any human foresight. The excitement which naturally follows on a shocking occurrence should be calmed down, and no undue fears should be permitted to prevent the people from availing themselves of the advantages within their reach, and by which they may be safely, inexpensively, and cheaply conveyed to their destinations, effecting a double saving, both in time and money.

But, if the public had a right to desire that no unnecessary delay should have been interposed before they should receive the assurance that would be afforded by a trial before one of the judges of the superior courts, with able counsel to speak on either side, it appears to us that the proprietors of the halfpenny boats, more especially Mr. Smith, upon whom a certain degree of censure has been cast, have had a still stronger claim thereto. That gentleman has suffered a heavy pecuniary loss, not only in the destruction of his property on the occasion in question, but also in the prejudice excited in the public mind against the mode of conveyance he had provided, and which prevented many from availing themselves thereof, and every day increased that loss. He had a right, too, to be permitted to vindicate his character on the earliest opportunity. He has been accused of negligence and carelessness, where the safety of his fellow creatures was at stake, of being actuated solely by the desire of gain, and of acting additively and disregarding every consideration that might in any manner interfere with the amount of his profits. These are weighty charges if well founded, and great as the benefits unquestionably have been which the public have derived from Mr. Smith's speculation and enterprise, these advantages would not be sufficient to free him from those grave imputations. We shall, however, see, from the evidence, that has already been adduced, how far they may have been warranted by the facts, and whether Mr. Smith has really been so much in fault, or his conduct been so worthy of censure as has been asserted.

It appears that in the month of September, 1845, Mr. Smith, in conjunction with three other gentlemen, formed a company, for the purpose of conveying passengers on the river at a much cheaper rate, and with greater expedition, than at that time or previously had existed. It should be borne in mind, that at that period the lowest fare from Charing-cross to the City was, by omnibus, 6d., and by steam-boat, 4d., that, in consequence of the crowded state of the thoroughfares—to say nothing of the constant breaking up of the pavement, which frequently compelled carriages to travel by circuitous routes—it was impossible to calculate on arriving at London-bridge in less than half an hour. By the time existing river conveyance it required from 15 to 20 minutes for the same purpose, two or three stoppages taking place, which consumed much time. Mr. Smith believed that, by procuring vessels of a peculiar construction, the journey might be performed in from five to six minutes, and that, by the application of a new patent, by which a considerable saving of fuel would be effected, a charge of 1d. to each passenger would be sufficient to remunerate the proprietors for their outlay. He accordingly had boats made with both ends alike, which could be propelled in either direction with equal speed and safety; in fact, each vessel would act either as stem or stern. By this peculiarity the necessity of turning in the river was wholly obviated, and a considerable loss of time consequently avoided. These vessels were fitted up with engines of a new construction, being, as stated by Mr. Smith, in his evidence, an application of Watt's principle to oscillating engines. They were found eminently to answer the object intended; the distance between the company's pier at the Adelphi and London-bridge was performed, without any stoppage on the way, in five minutes when the tide was favourable, and in seven or eight minutes when against them. The boats were crowded every journey, and many thousands were every day borne on the silent highway, and breathing the pure air of the river, in place of enduring the heat, the bustle, and the delay that would otherwise have been sustained. It is needless to expatiate on the vast importance of such an accommodation. It was found that the punctuality of the boats might be relied on, and, consequently, such numbers made use of them that the original low estimate of 1d. per passenger was proved to be far more than was required to defray every expenditure, and to leave a fair profit on the capital embarked in the project. Had Mr. Smith been an avaricious man, greedy of gain, and anxious to obtain it by any means, *far as nefas*, he would at least have retained the penny fare, or, perhaps, raised them when he had established a character for his boats; but, on the contrary, he made a still further reduction—he gave the public the benefit of his enlarged profits, and when the experience of the public was reduced thereto, and that without any great competition to contend against, or any perceptible falling off in the numbers who travelled by his boats.

Formerly it was the habit, both by omnibus and on the river, to charge at a higher rate on Sundays, thus making the hard-working man, who had been closely confined during the week, pay exorbitantly for the privilege of breathing a pure atmosphere on the Sabbath-day. Mr. Smith was the first who reversed this principle, who conceived that price ought to be lowered in place of being raised, in consequence of the increased traffic, and he, therefore, conveyed passengers on Sundays at half-price, for some time before the general reduction of his fares. Since that time other companies have reduced their rates; and persons may now be carried from London-bridge to Chelms for 2d., and from Charing-cross to London-bridge by omnibus for 3d. It appears to us, that Mr. Smith may fairly claim credit as the originator of the reforms which have given so great a saving to the public, and that every person in the habit of passing regularly from one end of the City to the other, is indebted to his sagacity and enterprise for an annual saving of several pounds. Mr. Smith was not only cheap himself, but the cause of cheapness in others.

But let us see whether this great cheapness was owing to any undue parsimony, either in the price paid for the boats, or in the wages of the men, or whether there was really that negligence that could justly be construed. The contract for the boat has been before the public. The agreement to supply it was entered into with a respectable engineer; the price to be paid, 2550/-, was not in any manner below the usual rate for similar boats, and Mr. Joyce undertook "to make, construct, finish the whole in all respects ready to go to work upon her station, of the very best quality, best of materials and workmanship, for the sum agreed on." Here, at least was no undue economy, but every exertion was made to procure the best articles of the kind for the public. The men engaged were, according to the evidence, "superior men, paid from 15 to 20 per cent. higher than any on the river." The stokers' wages were 17. 9s. per week, and Clarke's, the engineer, 2d. This did not show a desire to adopt any petty or paltry saving to endanger the public by entrusting them to incompetent persons.

Now remains to be seen whether or not there was a culpable negligence on the part of the proprietors, and whether they acted as perfidious men, whose lives and properties were at stake. Mr. Smith travelled daily backwards and forwards by the boats, and exercised his personal superintendence of the mode in which they were managed. In his own sworn statement, he says—"I have been constantly on board, hoping, by my presence, to keep parties steady at their duty." This was certainly very far from either being negligent or careless. If there was danger to any, Mr. Smith himself participated therein to the fullest extent. A minute book was kept for the entry of complaints, and reports from the captain or any of the crew, which was open to, and inspected by, all the proprietors. Any passenger would have been attended to who had stated anything objectionable, but none of those who came before the coroner thought it necessary to inform Mr. Smith, or any of the parties connected with the company, of what they had observed, until after the accident had taken place. But it may be said, that the complaint against Clarke was not properly investigated, and here comes the only part of the transaction in which Mr. Smith's conduct was in the least degree doubtful, or other than highly praiseworthy, and of this we think a great deal too much has been made.

Clarke was a man who had received the highest character. Mr. Joyce thought him the best man in his establishment, and had employed him for six or eight months as superintendent over a number of men. Mr. Smith said—"I never saw any irregularity in trying the valves, and never heard of it until the quarrel between Clarke and the stoker. I never conceived that such a thing could have been done." It was reported to me that the stoker had accused Clarke of trying the valves on one particular occasion. This was when the stoker was discharged. I spoke to Clarke, who denied that he did such a thing; he said he never could be guilty of such a thing. The man who informed me had not the good opinion of any one in the company. I had great confidence in Clarke, and took his contradiction of trying the valves as a sufficient contradiction to the stoker's assertion. I was satisfied with Clarke's evidence, because he was the responsible person, and being responsible, he had enemies among the other men." Now this, which was fully corroborated by Mr. Poole, the superintendent, appears an extremely reasonable view, and such as any person would be likely to take who heard a highly improbable accusation preferred against a confidential man, by a person on whom he placed no reliance. We, therefore, think that Mr. Smith is exonerated on this charge, and that he omitted no reasonable precaution. We have thus gone through the principal points of the evidence that was brought forward in this lamentable case. It certainly appears as if Mr. Smith had been hardly dealt with in the reproaches that were so lavishly heaped upon him. We had not intended to have alluded to the matter until after the trial of Heasman, but, as that has been adjourned, we think it is only a matter of justice to notice those points to which sufficient attention has not hitherto been paid. The *Sun*.

ON NERVOUS DEBILITY & GENERATIVE DISEASES.—Just published, the Thirtieth Thousand, an improved edition, revised and corrected, 120 pages price 2s., in a sealed envelope, or forwarded, post-paid, to any address, secure from observation, for 2s. 6d. in postage stamp, illustrated with numerous anatomical coloured engravings.—"MANHOOD: the Causes of its Premature Decline, with Plain Directions for its Perfect Restoration." A medical essay on those diseases of the generative organs, emanating from solitary and sedentary habits, indiscriminate excesses, the effects of climate, and infection, &c., addressed to the sufferer in Youth, Manhood, and Old Age; with practical remarks on marriage—the treatment and cure of nervous and mental debility, impotence, syphilis, and other urino-genital diseases, by which even the most shattered constitution may be restored, and reach the full period of life allotted to man. The whole illustrated with numerous anatomical engravings on steel, in colour, explaining the various functions, secretions, and structures of the reproductive organs in health and disease; with instructions for private correspondence, cases, &c.

By J. L. CURTIS and CO., Consulting Surgeons, 7, Frit-street, Soho-square, London.

REVIEWS OF THE WORK.—"Manhood: a medical work. To the gay and

GAS AND GAS-METERS.

Mr. DEFRIES gave a lecture on this subject, at the Literary and Scientific Institution, Arthur-street, Old Kent-road, on Wednesday evening last, the 10th inst., which was numerously and respectably attended. He introduced his subject, by alluding to its extreme importance, as gas, having now become one of the necessities of civilized life, it was a matter of the first consideration that it should be delivered to the consumer in a pure state. He was sorry to say, that some of the companies in London distributed a most impure gas; he would not mention their names, as he hoped they would take the hint, and improve the commodity; as it was now full well publicly known, that there was no reason why every gas establishment should not deliver gas to their customers totally free from sulphuretted hydrogen and ammonia; the former gas was most injurious to health, and destructive to ornamental plating and gilding, and particularly to painted walls and oil paintings. Hence, from having obtained impure gas, that light had altogether been excluded from some public institutions, and many private houses. He could, however, bear his testimony to the fact, that there were several of the London companies who supplied gas perfectly free from the above impurities; and why was it not so generally? While he could not but applaud some of the London companies for the excellent gas they supplied, he could not but condemn others for producing some equally impure. But he would not mention names; his object alone was to serve the public; and he hoped, that those companies which had been in the habit of sending out an indifferent article, would see their interest clear enough to effect such an alteration for the future, as would benefit the public and themselves. (Cheers.) The gas then burning in that room he had tested; and he could say, much to the credit of the superintendent of the company, it was perfectly pure. The fact was, when many parties determined to have gas in their private houses, they did so without ascertaining what company was to supply them; and when they discovered its impurities, they abandoned the light altogether. In every establishment in Scotland, they produced pure gas, and so they could in London, if they chose. Sulphuretted hydrogen and ammonia, not only rapidly destroy the meters, and fittings, but passes the burners so rapidly, and, at the same time, cause the meter to register so irregularly, that a burner, which, on one day, perhaps registers 100, may, on the next, with the burner turned on to the same height, and during a like period, register 200. These defects are then laid on the meter-makers; and the cry is, "take away that meter—it's of no use"; while the real fault rests with the gas manufacturer. He was talking with the engineer of one of the gas works very recently, and was told by him, that if (Mr. D.) had not altered his meter to the new protective rotary valve, the very first time the purifier was neglected to be changed, the first meter brought to be tested, would be rejected. To which Mr. Defries replied, that he did not imagine the engineer would neglect to get his dinner, and that he was not paid 200' or 300' a year to neglect doing his duty.

Mr. Defries now proceeded to describe a new plan for the condensation and washing the gas, as it left the retorts; illustrated by glass receivers, and a glass "Leslie's" purifier; the gas being supplied from a small retort, placed in a tall fire-pan, filled with burning coke. The gas in the crude state, as it leaves the retort, passes through a series of zigzag pipes, immersed in water, which in practice would not be more than 5 feet high, instead of the very tall condensing tubes now in use; by which means Mr. Defries considers the gas is immediately cooled, and perfect condensation ensues; from thence it is conveyed to the washer—merely a reservoir of water—through which it passes, and by well washing only, all the ammonia may be separated. It next enters the purifier, a model of Leslie's, consisting of six compartments, separated by sheets of perforated metal, on which dry slaked lime was placed, to about an inch in thickness. The different degrees of the purity of the gas, as it passed the several chambers, was highly interesting—a dense cloud appearing in the first, while the last through which the gas passed before it reached the gasometer was perfectly clear. Mr. Defries stated, that gas ought never to be of less specific gravity than .400 to .412, or even .420; while, to the shame of some companies it is spoken, gas supplied in London of not more than .350. He had lately made a tour through Scotland, had visited the works at Glasgow, Paisley, Edinburgh, Leith, and Borrowstowness, and found all of them producing the most pure gas. He mentioned a fact, which shows how gas lighting is appreciated in the "cannie north." He received a communication from the engineer at the Borrowstowness Gas-Works, requesting he would wait upon them, as they should want several hundred meters. Mr. Defries accordingly posted off, but on arriving at this small town, was surprised to find only about 12 shops. On expressing this surprise, the engineer informed him that the people in London knew nothing about the matter; the several hundred meters would be required for private families, and even single rooms occupied by working people—as every working man, if he pays but 2s. a week for a room, has the gas laid on, knowing it to be cheaper than oil or candle. The lecturer then called attention to the various dry meters, which had been introduced, most of which were obsolete—Crole's, Edge's, Sullivan's, Noon's, Hutchinson's, &c. He particularly alluded to the latter, one of which he had endeavoured to obtain, but could not in London. It was the meter of the British Dry Meter Company, which company consisted of the chairman and directors of the London Gas-Works, who forced it on their customers whenever they could; but it was so faulty that 400 of them, which had been tried in Devonport, were all taken down again, and were now for sale in that town. He spoke of Mr. Sullivan's meter, which was now obsolete, and said, that it was his opinion, that no dry meter could work well that was constructed with two partitions, as was the case with Sullivan's. The meters of Mr. Crole and Mr. Edge were made like Sullivan's, and, in fact, so much resembled it, that he (Mr. D.) could see but little difference between them.

Mr. Defries had now 18,000 meters in use; and, notwithstanding the improvements he had made, in separating the working parts from the action of the gas, some of it was so foul, that the partitions, or diaphragms, would become corroded in six months; he exhibited a specimen, corroborating the fact. He did not wish to appear too vain of his own production, but he had tested it in every way possible, and found it a perfect measure, and he conscientiously believed it to be the most perfect yet produced. It would act correctly, with a pressure of half-a-tenth, while Hutchinson's required one inch, or ten-tenths; and with such a meter, and a good article, gas was the most cleanly, the most safe, and the most economical of lights. He then alluded to the extravagant manner in which many shopkeepers, who burned gas at so much per burner, per quarter, wasted it; while all who burn by meter had to pay for it—showing that the fairest way for all parties was to burn by meter. As a proof of the necessity that existed of there being a fair system of measurement between the company, as the suppliers, and the public, as the consumers; and that those of the public who burned the gas fairly, and paid for it honestly, should not have to pay for what was wasted by the profligacy or cupidity of others, he instanced the following case:—He recently went into a hairdresser's, to get his hair dressed, and, on observing the gas alight in the middle of the day, and a pot of shaving-water boiling over it, he asked the proprietor the meaning of it; to which he replied, that he always warmed his water that way. "Do you burn by meter?" "Oh no; that would not do for me!" "How long have you used the gas thus?" "Oh, I always do it: and in summer, I cook by it, and save the expense and trouble of a fire." "But you pay extra for all this accommodation?" "Oh no! that would not do!" To which Mr. Defries indignantly replied, that he considered him to be a rascal and a thief; and the answer he received was, that it was "only smoke; and what did it matter?" (Loud cheers and laughter.) Mr. Defries then observed, that if once pure gas was universally made, it would be universally used for cooking, for warming, and for lighting. The Reform Club already cooked for their extensive establishment by gas—the building was warmed with it, and, of course, lighted by it; and how handy, economical, clean, and comfortable, would it be for the working man, particularly in summer, if, 10 min. before his dinner, his wife could turn on the gas, cook their steak, and turn it on again, until time to put on the kettle for tea. Mr. Defries dwelt but for a moment or two upon his own meter, which, during the delivery of the lecture, was working with admirable precision, as he did not wish to arrogate too much to himself, but would simply say—that there was his child, and he defied the whole world to produce its equal. (Applause.)

Mr. Defries here went through several illustrations of the use of gas in domestic life, in a humorous manner, which called forth much applause and laughter. He then introduced "Leslie's" patent burner, consuming 3½ ft. per hour, and which certainly gave a light equal to an Argand, which burns double the quantity—the principal peculiarity is, what the inventor calls a "combustion chamber," being a glass not more than 2 inches high, but of larger diameter in the body than at top or bottom—the former being contracted to about half. On putting a tall chimney on this burner, not one quarter of the light was given—while, he stated, that it would be found, if examined, that the same quantity of gas was passing and being registered as by the better light.

Low's naphthalising apparatus was exhibited, in which the gas passes through a sponge saturated with naphtha, and, taking up a portion, an extraordinary brilliancy is given to the light. Mr. Defries begged to remind the meeting, that by the same rule that gas, in its course, took up the naphtha, and improved the light, so would it take up the water in the wet meter, and not only corrode the fittings and injure the meters, but cause that flickering and jumping of the light, which the good dry meter had done so much to remedy. Mr. Defries stated, that he had a 200' and a 150' light meter at the Thames Tunnel, three for 300 lights each at the Italian Opera, one 1000 light at Cremona; and, as a striking proof of the value of the instrument, of which he had the honour to be the inventor and patentee, he begged to inform the meeting, that he had been patronised by Royalty, by Government, by the first-rate

establishments in London, at the Royal Dockyards, and at the Thames Tunnel, his meters had been in uninterrupted action for four years, night and day, which was equal to nearly 40 years of ordinary use. (Loud applause.) He begged, furthermore, to state, that he had now two making for the House of Lords. He concluded, by stating that, in addition to his establishment in St. Martin's-lane, he had a very extensive one in the Hampstead-road, and he had lately opened one at Glasgow—a proof that his meter would find its way. He made some observations on the value of such an institution as the one they were then attending, and expressed a hope that it might flourish, and thus further the propagation of the great truths of science, and amuse, edify, and instruct, the rising generation.

The lecture having lasted more than an hour, a gentleman proposed a vote of thanks to Mr. Defries, for the information and amusement he had given them, which, he assured the meeting, was gratuitous, and must have put him to considerable inconvenience and expense; the motion was seconded, and carried with acclamation, and Mr. Defries having replied, the meeting broke up.

THE GAS MONOPOLY IN MARYLEBONE.—A meeting of the committee appointed by the vestry of St. Marylebone, to consider the subject of the supply of gas, and the application of the Western Gas-Light Company to lay their mains down throughout the parish, took place at the Court-house, on Thursday evening.—A deputation from the Western Gas Light Company, Kensal-green,

stated that they would be prepared to lay down the pipes of the Western Company, and light the entire of Marylebone, in three or four years. Their charge for the public lights would not be cheaper in price than was paid at present, but, as the gas to be supplied would be 75 per cent. stronger than that now used, a vast saving would hence be effected. The private consumers, on account of the purity and high illuminating power of the gas they propose to give, would reap a benefit of at least from 35 to 40 per cent. They would guarantee not to compromise with any existing company.—Mr. BELL wished to know how it was, that the deputation now made a different statement, with regard to price, to what they did when they first came before the vestry? He certainly understood that they were not only prepared to give a stronger and purer gas, but, at least, at two-thirds less in price than was at present paid. That was, instead of their paying 7s., they would only have to pay 4s. 6d. or 5s., per 1000 ft.

Mr. TAYLOR said Mr. Bell was mistaken: they considered their gas would be cheaper consequent on its high illuminating power, and other advantages.—After some deliberation the deputation expressed their readiness to contract with the public lights of Marylebone, at the termination of the present contract with the Imperial Company, in 1849, at the rate of 3s. 10s. each public light per annum, being 1s. less in each lamp than the price now paid.—The deputation having withdrawn, Mr. Bell expressed his want of confidence in the new company, on the ground that they had shifted about with regard to price. Ultimately a resolution was adopted, recommending the vestry to allow the Western Company to lay their mains throughout Marylebone, upon giving full security to the satisfaction of the vestry, within such period as they shall require.

STATISTICS OF THE GAS COMPANIES OF THE UNITED KINGDOM.

Name of Company.	Date of Establishment.	Rates per 1000 cubic feet at which the Gas has been supplied.		Amount of Fixed Capital at the Latest Date.	Rate per Cent. of Dividend.		Highest and Lowest Price of Coal paid by each Company since established.	
		On the Establishment of the Company.	At the latest Date.		Last Dividend.	Highest Dividend at any Time.	Lowest Price of Coals.	Highest Price of Coals.
ENGLAND.								
Accrington	1841	10s	8s	£ 5,500 0 0	£ 5 0 0	£ 5 0 0	12s 6d	18s 0d
Ashton-under-Lyne	1825	12s to 10s 6d	8s 6d to 6s	42,500 0 0	13 4 0	13 4 0	7 6	10 6
Barnsley	1821	13s 0d	7s 6d	6,000 0 0	9 0 0	10 0 0	5 4	6 9
Bath	1818	15 0	7 0	50,000 0 0	8 0 0	8 0 0	8	17 7
Bilston	1846	6 0	6 0	25,000 0 0	—	—	—	—
Birkenhead	1841	10 0	7 6	56,553 0 0	3 7 6	3 7 6	12 3	16 3
Birmingham	1825	12 0	6s 8d to 3s 9d	240,000 0 0	10 0	10 0 0	—	21 3
Blackburn	1838	9 0	6s to 4s	24,000 0 0	8 0 0	10 0 0	8 0	20 10
Bolton	1820	12 0	5s 6d to 4s 6d	45,000 0 0	9 0 0	10 0 0	—	24 0
Boston	1825	12 6	8s 0d	8,000 0 0	6 0 0	6 0 0	15 0	10 9
Bradford (York)	1822	11 3	6 0	45,000 0 0	10 0	12 0 0	7 6	33 8
Brentford	1821	15 0	8 0	57,000 0 0	6 0 0	6 0 0	13 0	14 0
Bridgewater	1834	15 0	8 4	6,000 0 0	5 0 0	5 0 0	21 0	21 0
Brighton	1839	10 0	6 0	50,276 0 0	4 0 0	5 0 0	18 6	15 9
Bristol	1823	40s to 12s	6 0	40,000 0 0	5 0 0	5 0 0	7 7	8 7
Burnley	1824	12s 6d	5 3	19,945 0 0	1 10 04	10 12 10s	16 8	23 0
Bury	1826	10 0	7 6	6,570 0 0	—	—	22 0	22 0
Cambridge	1834	10 0	8 0	32,000 0 0	7 0 0	7 0 0	18 0	40 0
Canterbury	1822	16 8	6 0	18,000 0 0	5 0 0	12 0 0	9 0	18 0
Carlisle	1819	15 0	5 0	9,000 0 0	8 0 0	8 10 0	17 0 av.	—
Cheltenham	1819	10 4	4 8	17,242 10 0	8 10 0	8 10 0	6 0	10 0
Chesterfield	1825	12 6	7 0	12,023 14 1	5 18 9	5 18 9	9 0 av.	—
Cleeton	1833	10 0	5 1	5,000 0 0	7 10 0	7 10 0	14 0	21 1
Coventry	1821	15 0	7 3	20,000 0 0	5 0 0	5 0 0	9 6	11 6
Derby	1820	10 0	6 6	16,250 0 0	7 10 0	35 0 0	17 4	—
Devonport	1845	8 0	8 0	20,000 0 0	4 0 0	4 0 0	16 0	9 0
Dewsbury	1840	10 6	7s 6d to 6s	5,000 0 0	7 10 0	7 10 0	15 0	18 0
Dover	1822	14 0	7s 6d	11,000 0 0	7 0 0	7 0 0	9 0	14 0
Dudley	1821	15 0	5 0	12,000 0 0	3 0 0	7 10 0	23 0	23 0
Exeter	1816	15 0	7 6	40,000 0 0	10 0 0	10 0 0	—	—
Farsley	1843	7s 6d to 6s 3d	7s 6d to 6s 3d	6,000 0 0	7 0 0	7 0 0	25 6 av.	—
Glossop	1820	12s 6d to 3s 0d	6s 6d to 2s 6d	24,000 0 0	7 10 0	7 10 0	15 0	19 0
Gloucester	1846	10s 0d	10s 0d	10,000 0 0	7 0 0	7 0 0	14 0	—
Grimsby, Great	1822	13 0	6 0	15,000 0 0	8 0 0	8 0 0	4 10	8 8
Halifax	1846	—	—	10,000 0 0	—	—	—	—
Harrogate	1846	6 8	6 8	7,833 1 1	7 0 0	7 0 0	—	—
Hartlepool	1846	15 0	10 0	5,000 0 0	4 0 0	4 0 0	17 0	23 6
Hereford	1826	9 9	5 1	10,000 0 0	7 10 0	10 0 0	8 4	12 10
Heworth	1839	10 0	7 6	8,325 0 0	6 0 0	6 0 0	9 8	13 0</td

THE MINING JOURNAL.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Royal Society—Inner Circle, Royal's park	3 P.M.
MONDAY	Statistical—12, St. James's square	3 P.M.
	British Architects—16, Grosvenor-square	3 P.M.
	Chemical—Society of Arts, Adelphi	3 P.M.
	Medical—Bolt-court, Fleet-street	3 P.M.
TUESDAY	Linman—Soho-square	3 P.M.
WEDNESDAY	Society of Arts—Adelphi	3 P.M.
THURSDAY	Geological—Somerset-house	3 P.M.
	Royal—Somerset-house	3 P.M.
SATURDAY	Antiquarian—Somerset-house	3 P.M.
	Assize—14, Grosvenor-street	2 P.M.
	Westminster Medical—17, Saville-row	3 P.M.

On Mining, & the Practical Applications of Geological Science.

PROF. ANSTED'S LECTURES, AT KING'S COLLEGE.

LECTURE V.—ON THE APPLICATION OF GEOLOGY TO ENGINEERING AND ARCHITECTURE, AND THE SUPPLY OF WATER TO TOWNS AND CITIES.

Professor ANSTED commenced his fifth lecture, by considering the question of drainage, more particularly with reference to general engineering, which depended, in many cases, very distinctly on the geological structure of the rocks. And it did so naturally, as, for instance, in an ordinary road, properly made, where the drainage would ultimately have reference to the structure of the material and to the rocks in the neighbourhood. With regard to geological structure, it might happen that the beds which came close to the surface would have a strong inclination; and, in that case, where the beds were permeable, the road would be drained naturally, and where one part lay on an impermeable bed, and the other on a material which suffered the water to percolate through it, an attention to geological structure would enable them to carry off all the water very satisfactorily. This would illustrate the applicability of geological knowledge, even to common road making; but that knowledge was still more directly available in the case of railroads, which, running through a long extent of country, involved the necessity of frequent and deep cuttings, in the execution of which drainage, as connected with structure and geological considerations, must always come in. Suppose, then, they were to take a transverse section of a railway cutting, similar to one of the diagrams exhibited—if the beds were horizontal, the two sides would be situated in a similar manner with regard to accidents arising from unequal pressure; but if that were not the case, and the bank was composed of mud, clay, sand, or any slippery earth, in beds inclined to the horizon, some parts of the superincumbent mass would be more apt to slip down than others. Some strata would carry water, and others would allow it to drain through; and if the road did not go directly on the strike, in which case there was no inclination as far as the purposes of the road were concerned, there would be a greater tendency to "slip" on the one side than on the other. Supposing the uppermost beds were composed of some heavy material resting upon a bed of sand, the rain, in draining through the sand, would wash it away gradually, and a portion of the support being removed, the upper mass would naturally have a tendency to slide down upon the lower part. If once it began to slide, no matter how slowly—if the movement were only an inch per day, or an inch per month—any preventive measures were too late, and there would be a slip sooner or later, especially in heavy rains, or rains combined with frost. But before the superincumbent mass were set in motion, if by any means the water could be prevented from passing through the sand, it might be prevented. That was best done by cutting a drain on the other side, by which all the water which came on the surface might be carried off before it reached the sand. There would then be sufficient cohesion to prevent the upper part from being set in motion.

A knowledge of geological structure, in making these cuttings, was exceedingly useful, not only in preventing slips, but in reducing the cost of work. For instance, when the dip was in a certain direction, a slip was manifestly impossible, and in that case the slope of the bank might be very much steeper, and the expense of its removal saved. On the continent, it was not unusual in cuttings to make the banks in a succession of terraces; but, in this country, that plan, though exceedingly useful, was scarcely ever adopted. It was, however, being partially tried at New Cross, a place where much mischief had been done by slips, and he believed with a prospect of success. That was, however, a plan which could not be carried out without a reference to geological science.

On the subject of embankments the same principles of drainage were applicable, though another element of construction was brought into action. If a large mass of material were heaped in a particular way, it might be perfectly safe, and answer the purpose intended very well; while if it were placed in a different way, mischief would arise. The structure of embankments ought also to be regulated by the nature of the rocks on which they rested, as well as those of which they were formed; and although, as yet, few accidents had arisen, engineers might find it worth while to pay attention to this subject. Again, if an embankment was placed on a hill side, there ought to be particular adaptation to the way in which the beds lay. If a heavy pressure were put upon beds so situated, which had already a tendency to slip, that tendency would be increased, and, unless attention were paid to the drainage, serious accidents would inevitably occur. The kind of draining required was much of the character of that necessary in ordinary roads—by cutting off springs which had a tendency to run between bands of impermeable rock.

The subject of canals, and the way in which they were affected, introduced another element. In making canals, the engineer would constantly have to cut across springs, and through some strata which allowed water to percolate, and through others which actually produced water. In going across a district where there was much leakage, it was necessary to have a perfect knowledge of the nature of these rocks, which yielded water and abounded in springs; and of those strata and substances which were impermeable. On such circumstances depended many great practical difficulties in the construction of canals. It was a remarkable fact, that Mr. William Smith, who flourished about a century ago, and who was called the father of English geology, was himself a mining engineer, and first observed the geological structure of the country, as it affected the formation of canals. His life, lately published by Professor Phillips, his (the lecturer's) predecessor at King's College, would be found very useful and interesting, as it regarded the practical application of so much of geological science as was known at that day. In the life of Smith would be found some account of the construction of canals in his day, then as important as railways were now. They would see how he brought his knowledge to bear upon the problems at issue, and in that way they might themselves learn how to apply a great deal of that knowledge of geology which they might possess.

Professor Ansted next treated of the supply of water as an engineering subject, apart from the supply obtained from land-springs, or small artesian wells, considered hitherto on a comparatively small scale, and rather with relation to agricultural purposes than engineering. The subject of drainage and water supply was, perhaps, connected as much with architecture as engineering; but, when he had discussed its relations to the one, it would scarcely be necessary to touch upon the other.

With respect to the supply of water, he thought he could not do better than to give them a short outline of what had been done lately with regard to the large and most important town of Liverpool, which had been noted, for some time, as a place which was badly supplied with water, and had been more remarkable than any other town in England, for the prevalence of fevers, the more than average illness of its inhabitants, and the short duration of life in the major part of it. The members of the corporation appeared very anxious to do all in their power to remedy that which was certainly one source of those evils—namely, the deficiency in the supply of water. Accordingly, they resolved to obtain an Act of Parliament, empowering them to adopt some measure, which should give the town a larger quantity of that important element. The town was situated on the new red sandstone, and had hitherto been supplied from wells sunk into that stratum, which consisted of a red sand rock, sometimes very soft, sometimes rather hard, intersected with occasional bands of marl, very much mixed with large and continuous veins, often filled up with clay, and many of them completely impermeable. The new red sandstone rested upon conic measures, and certainly contained a great deal of water, which was absorbed from the impenetrable surface, or drained into it from the hills in pretty large quantities, of which the actual limits were ascertainable, since they knew how much fell from the clouds, and how much was evaporated; and they could calculate how much was lost by drainage into the rivers. The supply thus obtained was found to be very insufficient for the necessities of the town, and it was supposed that the quantity could not be materially increased from this source. This point, however, had to be decided upon by reference to the structure of the district, and by calculating whether they got all the available water of the district, or only a part, and it turned out that the latter was the fact. The mode in which this water was obtained was by wells, with horizontal galleries at their bottoms, to allow the admission of a large quantity of water, which was then pumped to the surface. The water obtained from the new red sandstone contained salts of iron and some salts of lime and magnesia, which made it exceedingly hard, and ill adapted econometrically for many useful purposes connected with the manufacture of that neighbourhood, and then called upon several scientific men for their opinion; and it is a fact of great interest, as illustrating the present practical position of geology, that it was thought necessary to have the opinion of persons, more noted for their geological knowledge than for their practical acquaintance with engineering. Professor Phillips was first invited to give his attention to the subject, but was prevented from doing so by his engagements with His Government. He (Prof. Ansted) was then applied to, and after close examination and full consideration, he came to the conclusion that a sufficient supply could not be obtained from the new red sandstone formation, he being of opinion that, though a somewhat larger quantity might be had of the water which fell on the district, yet that would not be nearly enough for the requirements present and prospective of a town like Liverpool. What was not to be done? Then came in that auxiliary of engineering with geological science, now necessary indeed to every engineer, who wished to do his work satisfactorily, and with the consciousness that, whatever the result, every means had been adopted which the circumstances of the case would allow. The engineers looked about the neighbourhood for a new seat, their object being to discover where the necessary supply was to be found. One scheme, which met with considerable favour at first, was to take the water from the Lake of North Wales, and convey it to Liverpool, a distance of 60 miles, by closed canals. Great natural obstacles, however, intervened, and it was found that this plan involved an enormous expense, with the chance of incurring still greater expense, in overcoming several of those natural obstacles, which could not be well estimated until the work was commenced. This scheme, after exciting much discussion, was at length abandoned, and the engineers began to look nearer home. After again considering the supply from the wells, and in convincing themselves of the utter ineffectiveness, they found they must resort to other means, and thus originated the somewhat celebrated Rivington Pike scheme. The Rivington Pike district presented a hilly surface of 17 square miles, particularly adapted by Nature for such a project. The plan pursued in this case was to take the district and measure its area of drainage, then to estimate the quantity of water that could be obtained from it, and, finally, to consider how the water might be best accumulated. This was a beautifully scientific problem, perfectly practical indeed; but one which had rarely, if ever before, been tried to the extent now proposed. First of all, they had to see whether the quantity of water would be sufficient; and this was effected by accurately marking the water shed, observing where all the rills and streams could be caught most conveniently, and, when caught, considering whether they could be conducted into some sound and sufficient reservoir. The model on the table, which was an accurate representation of the district, would show that all these points were readily attainable. The drainage was regulated by the shape of the country, and it might be seen either by the Ordnance Map, a contour map, or a model. In this case, he was able to exhibit a model, which was the best; but the Ordnance Map was the guide originally used. Having then found the area, the question whether it would yield a sufficient quantity of water to supply the town of Liverpool was next to be decided. This calculation involved a considerable amount of knowledge of

geological structure. It was easy to tell how many inches of rain descended from the sky on a certain space and in a given time; and they had only to multiply that by the whole area intended to be drained, and they would have the exact quantity which fell upon the whole. That was simple enough; but they had then to ascertain what was the nature of the surface on which the water alighted; for, if it were permeable, as sand, for instance, it was obvious that a large proportion would be absorbed and lost; or, if there were many hollows, the water would lie in them and evaporate. These, and other geological considerations, had all to be well considered; but geological science showed that the district, being composed of the bed of hard sandstone, called millstone grit, partially covered over with shaly beds belonging to the coal measures, the whole of it might, for practical purposes, be regarded as impermeable. The sandstone rock, oftentimes very soft, was here very hard, a good deal faulted but not open—so that it would allow almost the whole of the water to run off the surface. The consequence was, that almost all the rain which fell ran into the streams, which a further examination showed might be readily collected into two principal reservoirs on the side of the district nearest to Liverpool, which would be 24 miles distant. The natural valleys, in which it was intended to place these reservoirs, had, no doubt, held water before the bottoms were covered with fresh water silt. There were also beds of alluvial clay—an additional indication that a considerable quantity of fresh water had at some period been there. By means of two or three embankments, these lower districts would thus accumulate that water, which the structure of the upper districts allowed to run off. The whole of the rain which falls upon an area of 17 square miles would thus be collected, producing a supply of 20,000,000 gallons per day, sufficient for the town of Liverpool were it twice the size, and also for the supply of a more useful and economic article to the mills, bleach-works, and other works in the neighbourhood. Here advantage was taken of the peculiar natural circumstances of the district, to make the minimum quantity of surface produce the maximum amount of water; but which could never have been accomplished, but for a distinct geological knowledge of the structure of the district. Had it not been for a practical application of geological science, that on a certain description of stone the whole of the water would run off, the selection of the Rivington Pike district would never have been made, and the probability was, that Liverpool would have remained for a much longer period suffering from the want of a sufficient supply of vital fluid. This was a remarkable instance, in which a knowledge of structure had been applied to superficial objects of this kind.

The professor dismissed the subject of draining by explaining the nature of the operation of a newly-invented draining pipe (Watson's draining pipe), which was remarkably effective. It was cylindrical, with a great number of longitudinal slits, which were wider useful to insert in beds of clay, and, even after a considerable length of dry weather, might be given out water very plentifully. This efficient draining caused the beds to contract and crack, and, by thus making openings for the water, rendered the draining perfect. To the proper use of these pipes a knowledge of the dip of the beds was indispensable.

The next subject was connected with materials as required for various engineering operations, and used for a vast number of economical purposes. These he would divide in the same manner as he had divided the various rocks, and he should commence with the clay. Clay was either mixed with limestone or with sand, in various proportions, and was a very important material. All clays contained alumina, but a considerable number of materials existed, some known by the name of clays, and others, though belonging to the class not recognised by the general appellation. Of clay, properly so called, there were several distinct kinds. One was the clay found in the shape of subsoil, chiefly useful for agricultural purposes. In this case it consisted, not only of silicate of alumina, the base of all clays, but of limestone, magnesia, potash, iron, &c., and was none the worse for a little phosphorus; while it contained also a quantity of carbon. This admixture was indispensible for vegetation; but for "material" clays were better without all these foreign substances. The most common clay considered as a material was known by the name of brick clay; it was a silicate of alumina, with a certain amount of free sand in very small quantity, which might, however, be easily determined by washing. A good brick clay should consist solely of the material without lime or potash, and if the free sand was not in sufficient quantities, it must be mixed with it to make it work; principally speaking, the potash in the common sense of the word, was the best for making bricks. The clays derived from the decomposition of some of the old rocks were particularly valuable, and that derived from the decomposition of alluviums generally most pure, and was useful, in certain districts, in the manufacture of fire-bricks.

The fire-kind were the pure, and contained neither alkalies nor salts, either of which make it rank, in the great heat to which it was subjected in the furnace. The presence of such substances hinders the action of the fire, and the surface of the brick is to be turned to glass. Pure clay and sand were then the best for fire-bricks, and it was obtained, as he had observed, from slates. The London clay, one of the tertiary series, was the most part tolerably well adapted for bricks—indeed, all London was built of it; but it was not well suited for the making of fire-bricks, though it possessed many separate portions that were so. The miscellaneous ingredients might indeed be separated, but generally it was worth the trouble and expense, as there was no great difficulty in obtaining clay for fire-bricks.

Another of this class was called pipe-clay, or potter's clay, and was used in the manufacture of the rougher kinds of earthenware. This was a most useful material, and did not require to be so carefully selected as that used for fine pottery and porcelain. It contained a considerable quantity of water, and it was unctuous and sooty to the feel. It was necessary for the purposes of the potter that it should contain a considerable quantity of water, which usually amounted to 18 per cent. It did not contain sand; but it usually had about 1 per cent. of oxide of iron, and a small quantity of lime. The chemical composition of materials of this kind, however, was not very accurately ascertained, as they were for the most part accidental mixtures, and were apt to vary in different localities. Pipe-clay was obtained from beds situated in the midst of other clays, and they appeared to form a band of finer material associated with the coarser clays. There was a great deal of this clay found at Paris, where it was called argile plastique. The lower beds of the London clay were also described as plastic clay; but they consisted, for the most part, of gravel or pebble beds, for which that was not at all a proper name. Still, some of them contained this material.

There was another and a finer kind of clay, called Fuller's earth, used in the fulling of cloth, on account of its power of absorbing grease readily from woollens. It contained an unusually large quantity of silica, as compared with the ordinary pipe-clay, the proportion of the latter being 43 per cent. of silica, and 33 of alumina; while of the former was—silica, 53; alumina, 10; the other parts being made up of iron (about 9 per cent.), magnesia (1 per cent.), and water (24 per cent.). Fuller's earth was derived from the Weald clay at Nutfield, in the neighbourhood of Reigate, and from the lower part of the oolite rocks in Wiltshire. In each case there was a considerable variation in the colour, occasioned by the condition of the oxide of iron; but the texture was the same, and the colour was a matter of very little consequence.

There was another important material, called porcelain clay. This was derived from decomposed felspar, obtained generally from gneiss, or granite. It was the purest of all the clay rocks, being a pure silicate of alumina, consisting of 60 per cent. of silica, and 49 of alumina. A large quantity (8000 tons annually) of the finer kinds was obtained in Cornwall by artificial washing. Beside this, upwards of 25,000 tons of the coarser kinds was obtained from beds formed by the natural washing of the rains. The decomposed felspar was mixed with water in the artificial process, and moved along at a certain velocity, when the whole was gradually deposited in the shape of porcelain clay. The coarser parts were deposited first, when the mass moved most rapidly; next, the finer parts, as the mass moved slower; and, lastly, the finest of all.

There were other clays worthy of notice, as, for instance, the ochres, red and yellow, the colour being decided by the condition of the oxide of iron, which was present in them in considerable quantities. These, however, were not important as materials.

From some clays, the substance called alum was derived; but that like the ochres, was not an important material, geologically speaking, although interesting from the chemical process by which it was obtained. The talented lecturer concluded by briefly describing this process.

[The sixth lecture, in which Professor Ansted described the derivation and nature of other building materials, such as stones, ornamental and otherwise, and the practical application of geology to quarrying, and to the selection of healthy and eligible sites, will appear at length in our next week's Journal.]

THE CHEMISTRY OF THE METALS—NO. VI.

BY J. LOUIS JULLIEN.

Written for the Wolverhampton Chronicle—Continued from Mining Journal of last week.]

METALS WHOSE OXIDES ARE REDUCED BY HEAT ALONE.

MERCURY.—Mercury is a fluid at all common temperatures. In appearance it is a brilliant white metal, having the cast of silver; hence the name of quicksilver. It has been known from very remote ages. The ancients supposed it to be either gold or silver in a state of combination with some other substance, and the greater part of the alchemical researches were to point out the method by which the flying bird was to be united to the red eagle—i.e., uniting mercury to sulphate of gold. Mercury is 13.2 times heavier than water; it is solid and malleable at below zero, 40°. It contracts in cooling; it boils at 62°; and is converted into vapour at 670°.

Mercury is often adulterated with lead, tin, antimony, and bismuth. These admixtures may be very readily detected, by evaporating a small quantity in an iron ladle, or spoon, when, if the mercury be adulterated, it will leave a residuum. Another method is to press the mercury through a piece of chamois leather. This is the process generally followed for cleansing guns from the mercury, and becomes sulphate of iron, and afterwards pressed through leather. Mercury is to be well shock in the barrel, and afterwards pressed through leather. Mercury is found native in all mines which produce the sulphurite, in small globules; but by far the greatest portion is produced from the sulphure, which is reduced in the following manner:—A mixture of iron filings, lime, and native sulphure of mercury, in equal proportions, are placed in a retort, and an additional proportion of the lime is then placed on the top of the materials, in order to complete the decomposition. The retort is then attached to a receiver, and the whole carefully heated to a full red heat, when metallic mercury distills.

The theory of this is, that the iron takes the sulphur from the mercury, and becomes sulphate of iron, and thus having liberated metallic mercury, it is volatilized and condensed in the receiver. Mercury is of the greatest importance in medicine; it is administered in all possible shapes and forms, but the preparation most in use is the chloride, or, as it is commonly called, "calomel." This is prepared by mixing sulphate of mercury and common salt together, and subliming the chloride from it in a vessel constructed for the purpose. Another method is to mix metallic mercury with the bichloride, a preparation called "corrosive sublimate," and then subliming. To distinguish if calomel is perfectly pure, a small quantity should be placed in a spoon, and exposed to the heat of a spirit lamp, when it should all be converted into vapour.

Another form in which mercury is given in medicine is "blue pill." This is merely mercury in a fine state of division. To prepare it, mercury and confection of roses are triturated together in a mortar, until thoroughly incorporated; it is then made of the requisite consistency with liquorice powder. Of the oxides of mercury, the peroxide, or "red precipitate," is of the most importance; it is prepared from the nitrate by the aid of heat. Fuming mercury is prepared in the same manner. As the corresponding compound of silver, it is used very largely in the manufacture of percussion caps and detonating balls of various descriptions. In preparing it, the greatest caution is requisite, as the most frightful accidents have resulted from very trivial causes. There is an instance of it having exploded even in the moist soil, which resulted in the death of Mr. Henley, of the Apothecaries' Company, London. This talented chemist was preparing a quantity of fulminating mercury in the open air, when, from some unexplained cause, the whole exploded, literally blowing him to atoms, so parts of his body were found many hundred yards from the spot at which the accident occurred. Mercury combines with most of the other metals, and forms a class of substances called "arsenians," many of which are chalcocite. It is used in very large quantities for looking glasses; they are prepared in the following manner:—A sheet of perfectly thin foil is laid upon a flat board, and a small quantity of mercury is then rubbed upon it with a hair's foot. This immediately combines with the tin, which becomes exceedingly brilliant. The glass, having been perfectly cleaned, is then slipped on to, so as to obtain perfect contact. It is then pressed, and, finally, the remaining portion of the mercury is then expelled by

KINETIC is found associated with arsenic and cobalt; it is used in enameling and for colouring glass, but is not, as yet, of sufficient importance to be noticed in these pages.

[To be continued in next week's Mining Journal.]

Mining Correspondence.

ENGLISH MINES.

BARRISTOWN.—Enclosed you have our setting list for November month. We have so far completed the Stob shaft to the 18 fm. level, as to be able to resume driving the 12 fm. level end, and shall in a few days commence driving the 18 fm. level also west; the winze, on the main ledge, behind the 18 fm. end, is at present not sinking, in consequence of the men taking stopes from the end of it, those stopes are worth 8d. per fm.; the stopes under the 18 fm. level (Doyle's), are a little improved, worth 14d. per fm.; the stopes in the back of the 18 fm. level, new discovery, are worth over 20d. per fm., looking very regular and well for 3 or 4 fm. in length. The stopes in the back of the 12 fm. level are worth about 10d. per fm. In the adit end east, the ledge is large, 2 ft. wide, thinnish mixed with lead through the white iron.—Nov. 5.

BEDFORD UNITED.—At Wheal Marquis, the ledge in the 20 fm. level east, is still worth 8d. per fm.; the south ledge, in this level west, is worth 20d. per fm., and the north ledge is worth about 12d. per fm. In the 50 fm. level, the ledge is 2 ft. wide, good saving work; in Hooper's winze, in this level, the ledge is small, and unproductive. The ledge in the 70 fm. level east is 2 ft. wide, good saving work; in Harvey's winze, in this level, the ledge is 2 ft. wide, composed of spar, muriac

the tinstuff, stamped previous to the breakage to the engine), to a plantation directly behind Matthew's public-house, which is in the road leading from Harnowburn village to Idmocumba. An engine-house has been erected therein, about 60 fms. east of the intended engine-shaft, and 20 fms. north of the said public-house; smiths' and carpenters' shop, together with a material room and office above, have also been built in the plantation (these buildings have been inexpensive); the engine-shaft is being erected on the common immediately outside the plantation, and about 90 fms. north of the engine-house; the reason for this distance is, that it is intended to take the fine of the burning-house—the people working on the mine will now escape the arrears of the engine. The engine and stamp will be completed by the middle of next week; it is intended to get the steam up on Saturday next, the number of heads to be worked is 12; the engine will draw her condensing water from adit, which will also be applied to dressing. About 20 feet above the level of head of the stamp, and to the north of the engine-house, a reservoir is made, to catch the rain water and some small drains from the common. About 27 feet east of the engine-house, a shaft is sunk 22 feet deep, for the purpose of receiving the water after it passes through the floors, wherein a plunger will be placed to raise it again, to be used for the same purpose continuously—the dressing by this arrangement will not cease, even if the supply from the common totally fails, which will sometimes happen. The dressing floors are not yet put in, a small pave are engaged at the lower mine returning tin; I cannot say what quantity will be sampled, but I certainly think that it has been over-rated at 8 tons. I think these would have been nearer the mark. *Underground.*—The shaft intended for the plowwork was sunk by a former company—the 28 fm. level, on a flookan lode, south of the tin lode, and underlaying in the same direction; about twelve months ago, the present company continued this shaft to the 42 fm. level (deep adit brought up from Wheal Mary bottom), on the same lode; but when it was resolved to erect an engine at Gosselins, this shaft was cut down, and made a suitable size, as far as the 16 fm. level, where the tin lode shows itself; a shaft was then sunk through the tin lode to the 42, at a great expense. The pitwork is not yet put down; in sinking this shaft the lode has been poor. Since the commencement of the engine-house both ends have been stopped; but, lately, two pitches have been set—one in the 27 fm. level, at 11s. in the 11, and the other in the 42, at 9s. in the 11. The lode in the 42 east is large, 8 or 9 ft. wide, carrying branches of tin; and it is anticipated that when the 42 east is advanced to where the fission joins the tin lode, a good bunch of tin will be the reward of their labour—the same having been the case above (in the 28); the end west is looking poor. The operations on the copper and silver lodes are entirely suspended. There is a small pile of work—say, a smooth' stamping—spalled for the stamp to begin upon. The learning-house here is not built, but will be shortly. There will be a splendid lot of machinery on this mine in a week or two in active operation; but the tin will not pay the cost for a few months, although there is every probability of this turning out a profitable mine ultimately.—Nov. 9.

HOLMBUSH.—From my letter of the 6th inst., you are already in possession of the fact of our suspending the diagonal shaft for a while, and setting a level to drive south, to intersect the lode 12 fms. below the 120 fm. level, at 7s. per fm.; the price given will afford you information of the nature of the ground we have; the same remark will apply to the ground in the bottom of the shaft—a pretty killas strata I have seldom, if ever, seen. The ground in the 120 fm. level, west of the great cross-course (and south-west of the slide), is not quite so favourable for driving; the ground in the cross-cut we are driving south, in the same level, to intersect the lode now wrought on by the tributaries in the pitch below the 110, is very favourable for driving; the lode in the pitch just alluded to, is 2 ft. wide, and 4 fms. long from great cross-course, east to slide, and is worth 40s. per fm. We have also set a cross-cut, to be driven south, in the 120 fm. level (20 fms. east of Hitchens's shaft), to intersect the south part, or branch. The lode in the 110 fm. level south is 20 in. wide, producing about 5 cwt. lead per fm. The lode in the 100 fm. level south is 5 ft. wide, composed of spar and strings of lead—worth 5s. per fm.; one of the tribute pitches in the back of this level is improved; the other pitch is producing a fair quantity of lead, and the men getting fair wages. The lodes in the 90 fm. level south is 2 ft. wide, composed of flookan and spots of lead. We sampled on Saturday last, computed, 15 tons of silver-lead ores, and sent samples of the same to the lead smelting companies, to be tendered for at the company's office, on the 17th inst.—Nov. 9.

KIRKCUDBRIGHTSHIRE.—Having completed the fixture of the railroad to the 50 fm. level, we shall now resume driving the 50 fm. end west as soon as the stuff is cleared. The lode in the 40 fm. level end is 4 ft. wide, producing about one-third of a ton per fm.; opening on the caunter (north from this end), the lode is 5 ft. wide, yielding a similar quantity of lead; the stopes in the back of this level, worth three-quarters of a ton per fm.; the winze sinking under this level is in a large lode, say 6 ft. wide, producing 14 tons per fm. The lode in the 30 end west is 5 ft. wide, yielding 1 ton per fm.; the same may be said of the stopes in back of this level; the winze sinking under, and stopes from, the winze, lately holed to the 20 fm. level, are without alteration. The lode in the 20 end west is 2 ft. wide, very kindly, but poor for lead; the stopes in back of this level are producing about three-quarters of a ton. At Keith's shaft, we have discovered the lode, which is 2 ft. wide, composed of spar, mundic, flookan, some gossan, and other indications, promising lead at a little depth.—November 6.

MARKE VALLEY.—We are going on here with improving prospects—our next sampling, on the 26th inst., will be, I expect, 300 tons, the ore being much of the same quality as that last sampled. Our last parcel brought 710s. 12s. 6d., which was beyond the amount computed. Altogether, we are progressing satisfactorily; and the lode in the 60 fm. level, in Fleur's winze, continues to improve. I believe a meeting of the adventurers will take place next week, in Shallowbury, when a report will be made, a copy of which shall be forwarded.

MENDIP HILLS.—We have again begun opening the trench across the upper part of the slag ground, where we have a few small veins of slag, but are not yet sufficiently in the centre of the valley for the large beds known to exist in this part. I am glad to inform you, we completed the walls of the engine-house on Saturday evening, and the carpenters are busily engaged preparing the roofing for the same. I have this morning placed the men to build the flue of the engine, and shall begin with the stack to-morrow. The lodes in both the end and winze continue much the same as when I last wrote you—the former about 5 ft. wide, composed of flookan, white spar, and iron, with spots of lead; and the latter composed of quartz, a little flookan, iron, and limestone, intermixed with particles of lead at times—ground rather harder for sinking than it has been.—Nov. 8.

POLSAITH CONSOLS.—Our principal operations in the mine at present are almost entirely confined to sinking the engine-shaft, and preparing to erect the engine. We have a party occasionally breaking lead in the back of adit, at Trebetherick. I expect we shall sink our shaft in the Trebetherick side 12 fms. below adit, and cut the lode in the early part of January next, when we shall be in a position to drive north and south, and have a great length to stop from, about 90 fms. of which the adit level has been driven on, and produced a great quantity of lead, so that, if it be not different from what is found generally, we shall be in a position to raise good quantities of lead for the market. We have several tons of lead risen, but having as yet no floors prepared, we are prevented sending it to market. We are able as yet to keep the water with barrels, and expect to be able to do so without difficulty to the time the engine is ready to work, so that we hope not to be delayed sinking.—Nov. 6.

SOUTH DOLCOATH.—We continue to drive the 40 fm. level, west of engine-shaft, by six men; the lode in the end is 20 in. wide, composed of iron, gossan, fluor-spar, and spots of ore. The lode in the 20 end west is 2 ft. wide, composed of gossan, spar, iron, mundic, and some spots of ore—a kindly lode.—Nov. 8.

SOUTH WHEAL MARIA.—The lode in the 20 fm. level west continues to yield good stones of ore, and, as there is pretty much more water coming from the lode than for some time past, I have very little doubt but that we are near the caunter lode. The ground in the north cross-cut, in the 20 fm. level, is also yielding more water, which leads us to suppose that we are approaching a lode, although it would appear, from the underlay at surface, that there is nearly 6 fms. more to drive to intersect the next lode north, which I calculate on being accomplished by the latter end of the next month.—Nov. 11.

SOUTH WHEAL TRELAUNNEY.—Snell's engine-shaft is in course of sinking with nine men, down under adit 17 fms.—ground just the same as last mentioned, and water just the same.—Nov. 8.

TAMAR SILVER-LEAD.—In the engine-shaft, the lode is 2 ft. wide, composed of spar and ore—good saving work. In the 160 end north, the lode is 18 in. wide, producing good stones of ore; in the south end, in the same level, the lode is 2 ft. wide, composed of horn-spar and ore. In the 145 end north, the lode is small and poor; in the south end, in the same level, the lode is 2 ft. wide, with rich leaders of ore. In the 135 end, the lode is 8 ft. wide, composed of spar and ore, of a coarse quality. In the 125 end, the lode is 2 ft. wide, producing some saving work. In the 115 end, the lode is small and unproductive. At the north mine, in the 70 end, the lode is 2 ft. wide, composed of spar and peach, with some ore. In the 160 end north, the lode is 2 ft. wide, chiefly composed of spar. In the winze sinking in the bottom of the 60, the lode is 2 ft. wide, with branches of ore throughout. We sampled, on the 6th inst., computed, 90 tons of rich silver-lead ore.

TINCROFT.—I can speak of no improvement in the levels in the north mine; but there has been a good discovery made in one of our pitches to the west of the new engine-shaft. A pair of tributaries, by extending on a small branch, have now got what appears to be a regular lode to the south of the lode the level was driven on. We are now driving a cross-cut south in the 80, to intersect it—expect we shall have to do the same in the 90. Another pitch, to the east of same cross-course, has improved very much on the south part of the lode. At Palmer's, our sump men are still engaged opening plat ground, very hard. The 80 west is producing some ore, and kindly. The 70 end, and the stopes in the back of it, are producing good work for ore, and very promising. The winze, in the bottom of the 60, is also producing good ore. The 60 and 40 ends are producing occasional stones of ore, and kindly. In the south mine, the pitches below the 150 continue to yield fair quality tinstuff, and the tributaries working with spirit. The lode in the 142 east, and the rise in the back of it, is large, and tony throughout. The winze, in the bottom of the 120, is producing some tinstuff; the lode in the 120 and east is 4 ft. wide, worth 20s. per fm.; the lode in the stopes, in the back of this level, is worth 15s. per fm. The winze, sinking below the 110 fm. level, is worth 25s. per fm.; the stopes to the east of the winze, on the north part of Highburrow lode, is worth 20s. per fm.; the pitches continue much the same as for some time past. At Wheal

Providence, we are clearing the engine-shaft, below the 12 fm. level, as fast as we can, but we have hitherto found it very troublesome and expensive for timbering. We now hope the worst is over, and that we shall soon get to the 24 fm. level; wheresoever we have seen the Druid's lode, it has a good appearance.

TRELEIGH CONSOLS.—Christow's shaft, below the 110 fm. level, is sinking in the country; in the 110, south-east on the cross-course, we are driving on the cross-course; and in the 110, west of Christow's, the lode is 1 ft. wide, but very little ore. At Garden's shaft, below the 100, we have not yet commenced sinking; the men are cutting pitch, and about the penthouse; in the 100, east of ditto, the lode is about 2 ft. wide, with stones of ore; in the 100, west of ditto, the lode is 2 ft. wide, producing a small quantity of ore, and rather promising. In the 90, west of ditto, the lode is 2 ft. wide, producing stones of ore only, not to value; in the winze, below the 90 east, the lode is 8 ft. wide, worth 30s. per fm. In the 80, west of ditto, the lode is 18 in. wide, worth 6s. per fm. In the 60, west of ditto, the lode is 2 ft. wide, worth 4s. per fm. The new shaft, for Parent lode, is sinking in the country, ground as usual; in the adit cross-cut, north of ditto, the ground is much as usual; in the whim-shaft, below ditto, the lode is 20 in. wide, very promising, with good stones of ore and mundic.—Nov. 6.

WEST WHEAL JEWEL.—In the 57 fm. level, east of Williams's cross-course, on Wheal Jewel's lode, the lode is 1 ft. wide, worth 6s. per fm.—drove last month, 1 fm. 1 ft.; ditto west, on the same lode, the lode is 9 in. wide, worth 2s. per fm.—drove 2 fms. In the 30 fm. level, west of Quarry shaft, on Tolcarne tin lode, the lode is 18 in. wide, producing stones of tin—drove 1 fm. 6 ft. 6 in. The 12 fm. level, west of Quarry shaft, on Tolcarne tin lode, is suspended for the present, and the men put to drive in the 20 fm. level, west of Quarry shaft, where we expect to open better tin ground—drove 1 fm. 5 ft. In the adit level, west of Quarry shaft, on the same lode, the lode is 18 inches wide, the worth 10s. per fm.—drove 2 fms. 3 ft. 6 in. In the shallow adit, west of Quarry shaft, on the same lode, the lode is 20 in. wide, unproductive—drove 1 fm. 8 ft. 6 in. In the stopes, in the bottom of the adit, east of Pryor's winze, on the same lode, the lode is 5 ft. wide, worth 50s. per fm.—stopped last month 6 fms. 3 ft.—Nov. 8.

WHEAL ADAM.—We have intersected the eastern lode from the rise, in the 50 fm. level, and are now in a position to work Tonking's pitch, as also to explore the quartzose lode said rise, whereby the stuff will fall from the workmen, and enable them to stop the ground at a cheaper rate. We have met with another deposit of brown blonde, and are engaged in raising it; the lode at present is large, and mixed up with much earthy matter; but it is more than probable an improvement will take place in course of rising, as was the case with the last bunch taken away. The stopes in the bottom of the 40, on the quartzose lode, are worth 9s. per fm.; those in the back are suspended, whilst the tributaries' ore is being removed from the 28 fm. level. We expect to commence stopping the eastern lodes between the 40 and 50 in the course of next month, which will materially assist us in increasing the same plating of lead ore. In the course of opening the lode in the 18 fm. level, we have been raising gossan, mundic, and copper ores, most of which, though of low produce, will pay for taking away, besides we have every chance of meeting with other deposits of ores of more value. We have about 25 tons of silver-lead ores raised, 16 tons of which are dressed towards another parcel.

WHEAL TRELAWNEY.—The lode in the 52 fm. level north is 4 ft. wide, worth 12s. per fm.; in the same level south the lode is also large, and worth 14s. per fm.; the lode in the rise, over this level, will produce about three-quarters of a ton of lead per fm. The lode in the 42 north is worth 10s. per fm.; in this level south the lode is not so hard as it was, and is worth 7s. per fm.; in the winze, sinking under this level, the lode is worth 15s. per fm. We have commenced a rise in the back of the 32 fm. level north, close to the end, where we are opening ground that will pay well. We expect to hole this rise to the winze, sinking under the 22, in about a fortnight. The winze sinking under the 32, will produce about a half ton of ore per fm. The stopes throughout the mine are producing a fair quantity of ore. We have completed casing and driving Trelawney's shaft to the 42 fm. level, and are now cutting the plat. In the 22 cross-cut east we have a large stream of water, and, having a change of ground also, I think there is a probability of our cutting another lode shortly. At Vivian's, we are rising some good ore in the bottom of the 20 fm. level, north of the winze.

FOREIGN MINES.

ALTEN MINES.—The following is the estimated produce for September:—

Mines.	Tons. ore.	Per cwt.	Tons. copper.
Raijas	95	6	979
United Mines	35	6	210
Ryper's	45	6	90
Mancor's	5	5	25
Michell's	10	6	55
Old Mine	7	6	42
Carl Johan's	3	7	21
Wilson's	1	5	9
Powder House	3	6	19
Total	174	1041	

Mining Report from the 15th September, to the 7th October, 1847.

Raijas.—The prospects of this mine continue flattering, although the monthly produce has experienced no material increase; the ore contained in the different lodes is rich; but, being much intermixed with earthy and clayey substances, impregnated with carbonates and oxides of copper, which cannot be washed without sustaining a great loss of metal, we are unable to improve the quality of the returns. A small quantity of pyrite ore, which we now select, will, however, be found to contain from 25 to 30 per cent. of copper; this will not be included in the returns before the smelting operations are recommenced in the winter. Shaft No. 1 is not yet holed to Carr's workings, and, consequently, the stopes in this part of the mine is still idle. Labouchere's continues to make good returns, and the 5 fm. level, north, has a most promising appearance, and contains occasionally patches of good pyrite ore in the lode. The 10 fm. level, driving north, west from the bottom of Monk's shaft, is also looking more favourable; the lode still consists of gossan, with flookan (a soft whitish clay), and prian (decomposed carbonate of lime), it is impregnated with carbonate of copper, and the principle ore appears to increase with the depth. This level is now prosecuted in an entirely unexplored part of the mine, and its present kindly appearance leads us to expect great improvements hereafter. For the purpose of exploring this part of the mine at a still deeper level, it will be necessary to drive from the 20 fm. workings, and sink Monk's shaft 10 fm. deeper, after which a new level may be driven on the course of the lode; a period of 10 or 12 months must, however, elapse before these workings can be completed. The new stopes at the surface is still yielding fair returns, and we hope to be able to continue it throughout the winter. The large quantity of ice collected in the mine causes us serious inconvenience, and invariably at this season of the year we are more troubled than in the depth of the winter. It is a singular fact, that the influence of the summer heat is not felt in the mine until the winter is far advanced at the surface, and, vice versa, when the summer is set in, we have had some heavy falls of snow, but, as the ground is not yet frozen, we may expect this will again disappear, and allow us to prosecute our usual surface operations during a great part of this month.

United Mines.—The workings on Ward's lode have lately been subject to great fluctuations; one of the stopes continues productive of good ore, but the other has greatly deteriorated, and has, in consequence, been suspended; the men will be employed on another part of the same lode, where we expect to produce some good ore. The east level still contains good ore, but it is also less productive than when last reported. At Woodfall's, the tributaries have met with a good branch of ore on the back of the lode, and we hope they will be able to make some good returns. Hoskins's lode has hitherto yielded but a small quantity of low quality ore. In the course of the winter, if the state of your finances admit, I would beg to suggest the propriety of exploring Woodfall's lode, between the 30 and 50 fm. levels, west of the run. Since the suspension of these workings, a great part of the mine has fallen together, and the only safe way of reaching the 50, will be with a rise from the 80, which will probably cost from \$800 to \$1000.

Ryper's.—The cross lode (with one stop) is very poor, and will not pay the cost. The new lodes are still looking promising. Two more lodes have been discovered to the westward, but after working upon them for a few days, they were again abandoned; the ore produced was not found sufficient to pay costs.

Mancor's.—This is also less promising than before; we propose drawing the water from the old workings, for the purpose of making an attempt to work this part on tributary. One of the cross lodes, now working on tributary, is looking promising, but not rich.

Michell's.—Michell's has undergone no change; the workings are still on tributary, and confined to the places enumerated in my last report.

Old Mine.—The tributaries still continue to collect a small quantity of good ore, and judging from the result of the last few months operations, I am led to conclude that we only require the funds for emptying the old and tributary workings.

Powder House.—The old level has now been resumed, the prospects are much improved, and the tributaries are making fair returns of ore.

Carl Johan's.—Carl Johan's has also improved, the lode is larger, and more productive than formerly, but we are still uncertain with respect to its permanency; the produce, although small, is still very pure and good.

Wilson's.—Wilson's is again worked, but partially, and, consequently, the produce is very trifling; the expense of unwatering this mine, although an object highly desirable, would be too great to accomplish with our present means.

New Lodes.—The setting in of winter has again put a stop to any further exploratory workings. The prospects for the ensuing spring are better than for many years past, and the limited means at our disposal, subjects us to serious inconvenience, and places well worthy of trial, and which would undoubtedly ultimately repay the cost of exploring, cannot be worked during the summer, in consequence of the scarcity of hands, and during the winter months they are covered with ice and snow. If sufficient capital could be obtained for fully developing the resources of your very extensive mineral properties, I do not entertain the least doubt that the result would prove extremely profitable.

Extract from the Superintendent's Letter.—“Our mines continue very favourable, and the prospects of the deeper workings at Raipas have materially improved; if this development should be permanent, we shall not experience any failing off in the returns during the winter.”

BOLANOS MINES.—(Received November 8, per Medway steamer.)

El Borr Mine, Sept. 17.—I had lost the honour of addressing you on the 13th Aug., since which, I beg to say, our progress at San Genaro has somewhat improved, having sunk 98 varas in the shaft, and driven 194 varas in the cross-cut of San Jose during the month; and I hope, by the end of Oct., to see the shaft to the depth of the Guadalupe level, and also the cross-cut for the communication commenced. In San Fernando, the 10 varas of the shaft, as proposed in my last, has been completed, and the cross-cut De la Compania, is now again driving towards the vein. In Guadalupe cast, the vein has been a good deal disordered since I last addressed you, being considerably mixed up with slate, and, at present, the productive part is not over 2 varas wide. Another new rise on the back of this level has been commenced, but as the ore does not hold good much above the level, it

has since failed. The cross-cut north, in Guadalupe west, has been driven east through all symptoms of vein into the rock

THE CARADON DISTRICT.

SIR.—In the last Number of your valuable Journal, there is a letter from "An Adventurer," desiring "a description and specification of the mines in the Caradon district, with their relative situations," to whom I beg to direct attention to a geological map of the said district, by Mr. N. Whittle, land surveyor of Truro, drawn from actual survey, with the assistance of several intelligent agents in that neighbourhood. The map is a valuable document, in which the outlines of the mine sets are accurately defined, and all the lodes, cross-course, and selen dykes, laid down according to their true direction. The situation and boundaries of the different strata are also clearly traced, and, I think, in it "An Adventurer" will find all the information he requires.

London, Nov. 2.

J. B. C.

GREAT WHEAL MARTHA MINING COMPANY.

SIR.—I cannot help expressing my surprise at the simplicity of your correspondent "Geologicus," who has again occupied a space in your Journal. He has taken the trouble to count the line in which I have quoted his letter correctly from your paper, but in which he informs me I have taken advantage of a typographical error. What advantage, pray, let me ask him? What difference does it make to my argument, whether he really meant "the proper depth for ore, or for one" (meaning a level, I presume; but it was difficult to understand almost any of his "jumble of words," to which he himself finds it necessary to give a second explanation)? I am glad, however, to hear that the agents of the company were really looking for ore, by driving the shallow levels to such an extent at the Wheal Martha. "Geologicus" says, "the recommendation to give advice, previously to results being obtained, was not intended as a hint to gain information." Was he so short-sighted, as not to see that I was quizzing him? Now, with all due reference to his "professional knowledge," I will assert, that several "practical agents," who visited the Wheal Martha set, declared, long ago, that the company were throwing their money away, and that there was no chance of successful results from the operations which were going on. Why has not any of the large extent of ground, comprising the set, been explored, and the workings confined to one small spot only? I have been told by a well-known and experienced miner, who walked over the ground many months ago, that he and his friend expressed great astonishment to each other as they went along, at the highly-favourable indications across the valley, of which no notice whatever was taken. "Geologicus" says, again, that "he (the practical agent) is not able to adopt a better plan for her future development, than has been laid down by the company's agents," so the "company's agents" said years ago, and so their mismanagement may be again exposed. But I hope the directors, for their own sakes, as well as that of the shareholders, will see the absolute necessity of displacing those who have hitherto been entrusted with the "practical" operations of the mine, and that they will appoint men every way well qualified to take that situation. *Experientia docet*, as the Latin proverb says; and no experience had such an effect, as when it is of an adverse nature—so let the directors profit by the past, and provide as much as possible against future mistakes. I have only further to say, that I understand the "practical agent" is to communicate to you, Mr. Editor, on the subject of the Wheal Martha Mine, when he will, no doubt, be able to support his opinions by facts, and when he will, undecide "Geologicus," as to who and what he is. In the meantime, as far as regards personal friendship, I can still sign myself, as before.

AMICUS NEUTRO.

London, Nov. 11.

TAVY CONSOLS MINE.

SIR.—I would wish, for the benefit of my brother shareholders, to inform them briefly the state of the mine, as a caution not to be too easily biased in the disposal of their shares—seeing that no further calls are needed, and all the machinery and erections paid for. Knowing this, I am surprised at the low quotation in your last, as I have refused 42. 10s. per share this week, and would have declined 52., had it been offered. She sampled, at the last time—about three weeks since—150 tons; and, on the 18th inst., the captain states he will be ready with 50 tons more, for that purpose. In sinking from the 24 fm. level, the lode continues to increase in size and richness, and promises fully to warrant the most sanguine expectations as to the result in the bottom of the shaft; and, when in the mine, I witnessed frequent lumps of yellow ore brought up, exceeding 2 cwt. each.—H. Goss: Plymouth, Nov. 11.

WHEAL CONCORD MINING COMPANY.

SIR.—You have occupied much space, of late, in directing attention to the affairs of the Wheal Concord Mining Company; and, from a letter of Mr. H. English, one of the auditors, I was led to suppose that a meeting would take place on an early day. Since the publication of that letter, I am given to understand, a requisition, signed by the holders of 400 shares, or two-fifths of the number of which the company is composed, has been transmitted to the purser. I believe, according to the laws adopted in the cost-book, ten days' notice must be given. Now, as the time is so far advanced, since the transmission of the requisition, it is clear the meeting, if called, will not be legal. It does, I must confess, appear to me, that a game is being played by the purser, the secretary, the clerk at the mine, *cum multis aliis*, not only to deprive us of our rights, but to subject us, not only to obloquy and disgrace, but to a heavy charge on our purses, to defray the amount owing—to which, I presume, as a matter of course, we may add law charges. May I ask, through you, whether the purser and secretary are paid, now that the mine is abandoned? and, moreover, whether the accounts have ever been audited? I think, if a meeting be not called by the committee, it is, at least, the bounden duty of the auditors to call one, and explain their position, and that of the company.

London, Nov. 11. A SHAREHOLDER AT A PREMIUM.

[We insert the above, but trust that matters may be so arranged as to preclude any further discussion. We find, by an advertisement, in another column, that a meeting will be held on the 17th inst., when, we hope, such explanations may be afforded as will render any further claims on our columns unnecessary.]

WHEAL CONCORD MINING COMPANY.

SIR.—Having seen a paragraph in your paper, dated the 8th inst., signed "J. R. (An Original Shareholder)," relative to monies remitted to me by the committee, to discharge the liabilities of the mine, I feel it my duty to reply thereto. I beg to state that I only received remittances from London for four months—being July, August, September, and October, 1846—and that not sufficient to discharge the full cost; the latter two months were only enough to discharge the labour cost, and which was done. There were also many bills deducted from the two former months (July and August), which were to be paid in London—consequently, the only vouchers I have to produce will be a few for July and August, which I am ready and willing to transmit, on being required to do so by the auditors. In retaining the vouchers, I did so by the instructions of the purser, conveyed through his representative, being requested not to part with, or deliver, any vouchers, except to him. I have only, in conclusion, to observe, that I am perfectly ready, not only to furnish the vouchers in my possession, but to afford every facility to promote the objects and interests of the company; but it will be at once seen, that I have been placed in that dilemma, which precluded me from acting as I should have done, if left alone. It is said, "No man can serve two masters," and hence the delay with reference to the transmission of the vouchers in my possession. Having, however, received a letter from the secretary, I am prepared, and shall transmit them. I think it only right to draw your attention to the circumstance, that the remittances made to me were only for four months, and, consequently, I am in no way responsible for monies remitted to other parties. I must, therefore, leave it to the purser, or captain, who may have received the same, to explain, my only object in addressing you being to disabuse your mind, and that of others, of any act of dishonesty, or concealment, on my part.

Woolwood, Tavistock, Nov. 10.

THOMAS WEEKES.

CARADON WHEAL HOOPER MINING COMPANY.

A general meeting of shareholders, was held at the Wheal Hart Inn, Launceston, on Tuesday, the 24th inst., when the accounts were produced, showing—August and September cost, 369. 4s. 8d.—By calls received from August 31 to 1st November, 327. 8s. 2d.—leaving balance against the mine, 41. 10s. 6d.—to which is to be added, outstanding bills, 351. 4s. 9d. The arrears of calls amount to the large sum of 432. The purser was directed to take instant steps to enforce the payment of balance due from Mr. Martin to the adventurers, when he ceased to be the purser; and also to apprise each defaulter that he would be served with a writ without further notice, unless his calls are paid within 7 days. A call of 1s. per share was made; and the following report read to the meeting:—"Since my last report to the *Mining Journal* of the 12th October, there is an improvement in the caunter lode, west of the 50; my object in driving this level was to intersect the granite, to see if the lode did continue regular or not, as I had heard it hinted that it would not; this being accomplished, we find the granite to be soft, such as is congenial to copper; the lode much improved, being more settled and compact, with good walls full 2 ft. wide, underlaying north about 2 ft. in a fathom, with the most encouraging indications; it is composed of large quantities of rich looking muriatic, felspar, quartz, pebble, prian, and can, interspersed throughout with rich yellow copper ore, specimens of which I have forwarded for your inspection, thinking this would give you great satisfaction. This ought to encourage you to sink the shaft 10 or 12 fms. deeper, to put it to the granite, as you may be well assured that the lode now alluded to, will handsomely reward you for the outlay. We have about 2 fms. more to drive to cut Daws's and Carpenter's lodes; the end here is very wet—this shows that the lode is not far off."

HOBBY'S HILL MINING COMPANY.

At a meeting of adventurers, held at Liskeard, on the 28th Oct., the purser's accounts were examined and passed; they are of a most singular character, without a figure of explanation, as follows:—"Total expenditure to the present time, 5499. 15s. 4d.; due on five shares (parties bankrupts), 36s.; due on four shares (parties unknown), 28s.; due on Thomas's shares, 31s.—together, 54s.; other arrears, 12s. 16s.; liabilities, about 90s.; leaving about 36s. 16s.

in favour of the mine, supposing all the calls were paid."—It was then resolved, that the wheel, lately purchased at Wheal Gill, with 12 stamp heads, and other necessary works, for dressing and preparing the tin ore for the market, be immediately erected; that the purser do give notice to all persons in arrear of any call, that the same be paid within a fortnight, after which all defaulters to be sued in the Liskeard County Court; that a call of 1s. per share be now made, payable to the purser on or before the 10th inst.; and that a general meeting be held in Liskeard in about two months hence.—The following agent's report was read:—"Since the last meeting, on the 5th of August, we have sunk the shaft to the 30 fm. level, and carried down all the necessary works to the bottom of the mine; we have also driven the eastern end, at this point, about 10 fms. on the course of the lode—it has varied from 2 to 3 ft. in width, producing a sufficient quantity of tin to warrant our dressing it. Though not rich, I have reason to believe it will leave us some profit, and aid us in the expenses of the other works of the mine. Under these circumstances, I recommend the immediate erection of a 12-head stamp—the cost of which, with all other apparatus for dressing tin, will probably not exceed 600. The value of one and half ton of tin will pay for this; and I may fairly venture to undertake to return that quantity per month, when the stamps are at work, unless a decided change for the worse takes place, which I have at present no reason to fear, as the mine has gradually improved in depth; but, supposing the worst that can be anticipated should follow, and all the tin should vanish at the points we have now reached, and no other metal should appear, even then I believe we have tin enough to pay for the stamps—so that, under the most unfavourable circumstances we can imagine, we have no chance to lose by it, but a great probability of gaining. Under these circumstances, I recommend their immediate erection. I next call your attention to the present appearances of the mine, and our limited operation. I presume you are all aware that the mine has improved in depth—the bottom of the shaft being the best part. It is, then, our interest to carry down the shaft with vigour; it was also absolutely necessary to drive, and open the tin ground we had already sunk through—so that we might be able to make a return as speedily as possible, knowing that the state of our finances would not admit of both being done at once; and that we might be prepared to supply the stamps, when erected, with tin. I stopped the shaft for the time, which I should much like to be still sinking, if we could meet the expense. It may be asked, why, if we have a certain quantity of tin ground open, we do not take it away? I would answer, if we did, we must employ an additional number of men, with, of course, an additional expenditure, without any immediate benefit, as it is quite impossible to return it without the stamps; and, as there will be no difficulty to supply them, when erected, it is far better to wait until that is done. In conclusion, I beg to say our prospects at the present time are improved; although the mine is not rich. I repeat what I have often stated before, that we have a fair prospect of making Hobby's Hill a lasting and profitable mine."

WHEAL MAUD.—At a meeting of adventurers, held at the mine, on the 29th Oct., the purser's accounts were examined and passed, showing—Balance due purser last account, 251. 11s. 7d.; Sept. cost, 9. 13s. 3d.; interest, 1. 18s. 5d.; sundries, 2. 1s. 6d.—265.—By arrows of calls received, 129. 15s.: leaving balance due purser, 135. 5s. 9d.—It was resolved, that the mine be abandoned, and the materials immediately sold by public auction; and the purser is directed to continue legal proceedings against all defaulters.

SOUTH AUSTRALIAN MINING COMPANY.—A special meeting of this company was held at Adelaide, on Wednesday, the 19th May last; when the Deed of Settlement was signed and adopted. Some discussion arose, as to the holders of one or two shares voting, when it was resolved, that the present holders have one vote; but that the scale, in future, be from 3 to 5, one vote; 6 to 10, two; 11 to 15, three, and so on up to 91 to 100, fifteen votes, and one vote for every 25 shares above 100. It was also agreed, that no director should remain in office longer than three years.

ALTEN MINES.—Advices have been received from Altan, extracts from which will be seen in another column. It appears, that the prospects of the Rainas Mine are highly flattering, and the ore contained in the several lodes is rich. At Woodfalls', in the United Mines, a discovery has been made of a good branch of ore. At Ryper's and Mancur's, the lodes were looking promising, and the general prospects for the ensuing spring are better than for years past.

PRODUCE OF THE URAL MINES.—The *Oesterreichischer Beobachter* states, that the produce of the Crown and private mines of the Ural, during the first six months of the present year, was 166 poods of gold, and 29 of platinum.

WHEAL ANDREW AND NANGILLES.—In our Notices to Correspondents, in the Journal of the 30th ult., we alluded to the complaints of an adventurer, in the above mines, respecting the inefficiency of the underground agency. We have this week received another communication, in which he reiterates the charges, and states that he cannot, as we recommended, lay his complaints before a committee of management, as the adventure is managed by Capt. Francis solely, who calls the meetings, which generally consist of only about one-third of the shareholders; and, although he has appealed several times to them, the same course is pursued, which he declares, unless speedily altered, must inevitably stop the undertaking. The majority of the shares are held in London, and if things are really as bad as our correspondent represents them, we would seriously recommend him to communicate with some of the holders, and arrange for a general meeting, not only to take the case into consideration, but for taking measures for grappling immediately with the difficulty, and establishing a better state of things. Surely, if the adventure is managed by Capt. Francis he cannot refuse to call a legal meeting in London, on a requisition to that effect from a number of holders, holding a large interest in the mine.

ACCIDENTS.

North Fossey Consols.—Mark Smith fell down the shaft here, and was killed. Newquay Consols.—J. Holman was struck on the head by a balance-bob, which was being raised into its place, and killed.

Polygo.—T. Sheaves was killed by a fall of roof. White Kitty.—While H. Bratt was working at the 40 fm. level, and was in the act of driving his barrow to the plat, by some means his candle went out, and he fell about 10 fms., and died shortly after.

Dowton Iron Works.—Two persons were killed, by an accidental explosion of gunpowder, at these works, on Saturday last.

Doukham.—M. Hunter was killed by a fall of roof at Lord Londonderry's Nicholson Colliery.

Mais Vaux Colliery, Ricke.—A fatal explosion of fire-damp occurred here on Sunday last, by which Thomas Crook lost his life, and his brother Stephen, and two others, seriously injured. There was but a small accumulation of gas, and the accident occurred through the recklessness of the men, in carrying their lamps without the shield over them. John Coleman, aged 10 years, a nephew of the deceased, was killed on Monday by a fall of coal, and five brothers, and two grandsons, have likewise been killed by explosion.

North Elmack Colliery, Durham.—As G. Buckland was sending a tub of lime down the pit, his foot slipped, and knocking his head violently against a post, he was killed.

Bromley near Brierley Hill.—As G. Ashman and a companion were employed getting coal at Messrs. Firmin's, a quantity fell, and buried poor Ashman under its weight.

Hart's Hill, Broomstock.—As S. Bedard was getting coal at Messrs. Cochrane's Colliery, a quantity of coal fell and buried him: he died shortly after, from the effects of his injuries.

Bistons.—Fatal Accident to a Woman.—As Eliza Hollingshead was assisting as a bank's girl at the mouth of a pit in the neighbourhood, and was in the act of pushing a skip from the platform on to the bank, the cage gave way—the platform fell back, and the deceased (who was standing between two men) fell backwards down the pit, which is 44 yards deep, and was killed on the spot.

The two men narrowly escaped with their lives, by jumping down the pit until they were rescued from their perilous position.—J. Jones was killed on Monday by a fall of coal, and five brothers, and two grandsons, have likewise been killed by explosion.

Bromley.—P. M'Cone was killed by a fall of earth at Mr. Addenbrooke's Colliery.

Bowley Ropis.—M. Attwood, aged 12 years, was found dead at the bottom of the shaft of the British Iron Company, at Bradley Heath. It appeared that there was a gin near the bottom of the shaft, from which a large arm projected; and that, when any empty skips are being let down to the deep part of the pit, this gin revolves with considerable speed—and it is supposed that the deceased had inadvertently gone too near it, and was struck by the arm.

Birmingham Advertiser.—A collier, named Dandy, while working in a pit on the Dudley-road, had one of his legs and collar-bone broken—and subsequently died of his injuries.

A Pit on Fire.—A pit at the colliery of Messrs. Izon and Co., Hart's Hill, took fire on Tuesday morning last, in consequence of what is called the "breeding fire" communicating with a quantity of slack and other combustible materials lying about the pit. The flames spread with alarming rapidity—speedily bursting forth at the mouth of the pit, and presenting a fearful appearance. Fortunately, the men were not in the pit at the time—their hour for commencing work not having arrived; no other damage was, therefore, done, than the destruction of a horse, which was suffocated by the sulphur. The raging element was speedily extinguished by the men closing up the mouth of the pit, and preventing the admission of air.—Birmingham Journal.

Brampton M'c.—J. Briggs was sadly injured by a fall of earth, but is now fast recovering.—C. Boham, ironmonger, at Hady, had set a shot, and had given the signal to be drawn up; but on rising and seeing his powder he, called to the men at the top to stop, and then threw his cap at the fuses: thinking he had knocked it out, he descended to fetch his powder-case; when nearly at the bottom, the shot went off, and the fragments of stone cut his face in a dreadful manner.

Cote, near Chesterfield.—J. Calegan, aged 14, in attempting to descend the pit by the rope, missed his catch—was precipitated to the bottom, about 40 yards, and was killed.

Awful Death of a Man at Kelly Iron Works.—A shocking occurrence happened to a young man, named Powell, who was crushed to death by the falling of an immense boiler, weighing about 12 tons, belonging to Messrs. Blackwell, Jones, and Oakes. The deceased was a labourer, employed at the Oak Farm Works: and, on the occasion of the accident, was sent with the boiler in question to superintend its removal.

West Bromwich.—As H. Walton and J. Payne were in a working, about distance from each other, a large portion of the mass of coal they were getting suddenly detached itself, and, falling upon Walton, injured him so severely, that he died soon afterwards.

Comical Incusion, yet nearly Fatal.—One night last week, at Lodge Hill, near New Durham, an old pitman, named Marley, was preparing cartridges by candle light for blasting coal, and filling straws with gunpowder for the same purpose. His gunpowder magazine (an old tea-pot) stood beside him. Having filled one of his straws, how did the old man seal it? He shoved one end of it among the grease of his candle, just below the flame! He did this so cleverly, that it caught fire, and exploded his powder magazine! Both he and a little girl were burnt by the explosion. "Burnt children," says the adage, "dread the fire." The little girl will keep out of the way the next time the old gentleman prepares his fireworks; but whether he himself will be wiser for his warning is doubtful.—Gateshead Observer.

MEETINGS OF PUBLIC COMPANIES DURING THE WEEK.

THIS DAY East Coombe Mining Company—Eboray Arms, Barnstaple, at Two. Charing-cross Bridge Company—offices, at One. Tolcarne Mining Company—Tolcarne Hotel, Camborne, at Twelve. TURDAY Kirkcudbrightshire Mining Company—offices. Imperial Brazilian Mining Association—London Tavern, at Two. Equitable Gas-Light Company—offices, at One. Killarney Junction Railway—offices, Dublin, at Twelve. WEDNESDAY Wheal Anderton Mining Company—Royal Hotel, Plymouth, at One. Rhymney Iron Company—office, at One. THURSDAY Medical, Legal, and General Mutual Life Assurance Co.—offices, at One. FRIDAY Northern Coal Mining Company—Norfolk Hotel, Norwich, at Twelve. Compressed Air-Engine Co.—Thatched-house Tavern, St. James's, One. Metropolitan Joint-Stock Conveyance Co.—Pine Apple Tavern, at Seven.

VALUE OF LAND, &c.

The following results of some extensive sales, by auction, by Messrs. Farrebrother, Clark, and Lye, will convey an idea of the present value of land, and some other kinds of property:—

The Miskin estate, near to Cardiff, in Glamorganshire, consisting of several farms, lands, and extensive mineral properties—the whole about 5000 acres, in lots, 181,270.

A freehold estate, near to Bakewell, in Derbyshire, comprising 685 acres of land, divided into farms, with extensive fishery—the land let at 1027 per annum, 36,800.

The freehold Coombe End estate, on the Coteswold Hills, near to Cheltenham and Gloucester, consisting of a superior farm residence and buildings, and 374 acres of land—let at 739 per annum, 24,100.

Several policies of assurance in different life offices for 35,000*l.*, on the life of a nobleman, aged 75, subject to premiums amounting to 1340*l*

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning, Eleven o'clock.	
Bank Stock, 9 per Cent., 1664 5	Belgian Bonds, 44 per Cent., 86 4
5 per Cent. Reduced Ann., 651 3	Dutch, 24 per Cent., 52 2
3 per Cent. Consols Ann., 644 2	Brazilian, 5 per Cent., 77
3 per Cent. Municipalities, —	Chilian, 5 per Cent., 86 4
24 per Cent. Ann., 644 2	Mexican, 5 per Cent., 105 4
Long Ammunition, 39 1	Spanish, 5 per Cent., 104 4
India Stock, 10 per Cent., 224 22	Ditto 2 per Cent., 27 4
3 per Cent. Consols for Accr., 644 4	Portuguese, 5 per Cent., 76
Exchequer Bills, 10000, 3d., 2 dls. 1pm.	Russian, 5 per Cents., 105

MINES.—We consider that a fair amount of business has been transacted during the week; and, from the numerous inquiries for standing mines, we may assume that a decided change has taken place; but, as to its continuance to permanency, we will not attempt to predict.

It is gratifying to learn, that many of the purchasers of late are capitalists who have not before entered into these engagements—this is a feature pleasing in itself, and inclines us to hope that the improved market of the week is not of so transient a character as may be feared by some; and, at the same time, we trust their investments will prove both satisfactory and remunerative; and, should their further purchases be effected with similar precautions and advice, we have not the least doubt but an improved system of things will result, and mining be pursued with legitimacy and confidence. We anxiously desire to see this change of things, and we firmly believe, that the period must soon arrive, when the puffings of speculators, and the mines of the *undermining*, will cease to allure and deceive.

Inquiries have been made for the following mines—viz.: Botallack, West Basset, Great Devon Consols, East Wheal Rose, North Roscar, Conduor, Levant, West Seton, Carn Brea, Trelawney, &c.; but we do not learn that business has been done, although private negotiation is active. In Bedfords some little business has been transacted, and more likely to come off.

Buyers of South Wheal Tolgus shares have been heard of this week, at 35 and above; and we have learned, that a few shares were *done* by a party, near the Adelphi, under peculiar circumstances, at 20*l.* per share—hence our quotation as it stands at present.

The valuable sett of Wheal Francis, has, we understand, been at last granted to the Stray Park and Camborne Vean adventurers, and possession taken this week—the ground lies immediately to the west of Camborne Vean; the rich lodes of which are passing through it. The value of Wheal Francis is estimated at little short of 10,000*l.*

A circular has been issued to the shareholders of West Wheal Marin, stating the works has been suspended, on account of non-payment of arrears of calls. Many shareholders have complained to us, that, having regularly paid up their calls to the last meeting, they are now requested to pay forthwith the 10*l.* per share last made—whilst they think it due to them, that the purser should enforce the arrears of all calls, before riding the willing horses too hard.

The following shares have been sold since our last—viz.: Conduor, Treviseley and Barrie, Trehane, Mary Ann, Herodsfoot, Bedford United, North Roscar, Caradon Wheal Hooper, West Basset, South Wheal Tolgus, West Wheal Friendship, Holmbois, West Wheal Treasury, Wheal Ash, Tremayne, East Wheal Rose, Trelawney, Pennant, Stray Park, &c.

In foreign mining shares, we learn that many transactions have been effected. St. John del Reys, Del Montes, Copiados, Australians, Altena, Imperial Brazilians, and Borassas Range, shares have changed hands: in the latter, we are advised, a goodly number has been done, and have no doubt many more will follow, from the pleasing accounts from the mines, and the expectation that Greenock Creek, etc. long, will be second to none in the colony.

The accounts received from the Alten Mines speak very highly of the improvements there.

The Imperial Brazilian Company have been advised of the shipment of 83 lbs. of gold dust, to the value of 3800*l.*, and which is daily expected. The accounts from the mines give the raising of 50*l.* lbs. in the Banana Mine, from 24th July, to 30th August.

The Royal West Indian Mail packet *Medway*, arrived at Southampton on the 7th, brought home a freight of \$326,932 value, consisting of bullion, gold-dust, coin, and dollars.

RAILWAYS.—The week commenced in the share market on Monday with some improvement on the gloom of the previous week, although they fell off again, with the decline in Consols in the afternoon. On Tuesday very little business was done, and what sales took place, were done at lower prices than on the previous day. A slight improvement might be noticed in the early part of Wednesday; but, on Thursday and yesterday, business relapsed into its previous dull state, and closed yesterday evidently flat—speculators showing little inclination to purchase.

HULL, THURSDAY.—We have the pleasure to report a better week in the share market—confidence is returning slowly, perhaps but decidedly; and, although we must not expect the change all at once, we should not be surprised, in the absence of any new disasters, to see a gradual improvement in the value of shares; money is easy, not to say abundant, on the Stock Exchange. The accounts from the Lancashire markets are more cheerful, and in Leeds, where the speculations has been chiefly for the fall prices, are better. Still we have had so many false starts, that there is abundant reason not to be too sanguine, and there is not much fear of this with the minimum rate of 8 per cent. for discount. Unquestionably there are many railway stocks well worth buying at present rates, although it requires some care and caution in the choice—the late series of panics have effected quite a revolution in relative values. Local stocks are without much alteration. During the week Kingston cottons have been done at 24*s.* (price now 24*s.* to 2*s.* dis.), and old flax and cotton mills at 8*s.* premium. Glass shares have actually been done at 10*s.* dis., but at our present writing the feeling is rather better for them, although no change in price can be quoted.

RAILWAY TRAFFIC RETURNS.

Name of Railway.	Lbth.	Present accts.	Price per share.	Last Div.	Traffic Returns.
Arbroath and Forfar.	15	£179,939	26	4 <i>p.c.</i>	£214 218
Chester and Birkenhead.	15	705,793	38	—	683 523
Dublin and Drogheda.	35	733,655	54	3 <i>½</i>	880 750
Dublin and Kingstown.	73	473,282	—	9	846 966
Dundee, Perth, and Aberdeen.	268	285,745	35	6	829 352
East Lancashire.	24	1,307,763	14 <i>s.</i>	—	843 678
Eastern Counties.	2024	7,698,370	16	5	1174 9152
Eastern Union.	432	979,295	60	—	1141 418
Edinburgh and Glasgow.	48	2,375,745	45	6	3476 3714
Edinburgh and Northern.	29	953,207	16 <i>s.</i>	—	645 —
Glasgow, Paisley, and Ayr.	603	1,890,447	121	7	2608 2116
Glasgow, Paisley, & Greenock.	22	836,964	18 <i>s.</i>	3	1086 924
Gt. Southern & Western, Ireland.	1103	1,876,295	22 <i>s.</i>	—	1937 962
Great Western.	2402	10,530,763	97	8	17897 17580
Kendal and Windermere.	102	147,001	23	—	101 —
Lancaster and Carlisle.	70	1,291,913	6 <i>s.</i>	—	1196 —
Lancashire and Yorkshire.	923	6,087,814	72	7	6997 9648
London and North Western.	425	20,010,467	154	9	39254 39189
London and Blackwall.	4	1,145,289	5 <i>s.</i>	5	790 796
London, Brighton, & South Coast.	147	5,559,180	41	4	8849 7649
London and South-Western.	186	5,886,132	54 <i>s.</i>	9	7643 6232
Londonderry and Enniskillen.	143	160,013	24 <i>s.</i>	—	113 —
Manchester, Sheffield, & Lincolnsh.	492	2,078,135	89	5	2150 1762
Maryport and Carlisle.	28	424,417	—	3	831 650
Midland Company.	382	8,656,604	108 <i>s.</i>	7	21482 17864
Midland Great Western (Irish).	264	583,776	—	—	883 —
Newcastle and Carlisle.	65	1,184,080	117	5 <i>½</i>	2070 2405
Norfolk.	704	1,275,623	85	6	1985 1531
North British.	78	2,514,150	25 <i>s.</i>	5	2238 1170
Shrewsbury and Chester.	17	501,158	21 <i>s.</i>	—	520 —
South-Eastern.	29	1,339,560	20 <i>s.</i>	—	753 362
Taff Vale.	1574	6,309,218	27 <i>s.</i>	6	8947 8487
Ulster.	25	785,607	52	6	772 820
Whitchapel Junction.	12	130,000	—	4 <i>s.</i>	187 —
York, Newcastle, & Berwick.	2362	3,685,102	33	9	11418 7786
York and North Midland.	196	3,196,869	78 <i>s.</i>	10	8180 6226

FOREIGN RAILWAYS.

Name of Railway.	Lbth.	Present accts.	Price per share.	Last Div.	Traffic Returns.
Amiens to Abbeville.	28	573,338	—	4	603 —
Antwerp to Ghent (three weeks).	31	—	—	1313	—
Belgian.	—	—	—	—	64136 60670
Dutch Rhenish.	573	—	2 <i>s.</i>	—	909 889
Northern of France.	211	2,000,000	12 <i>s.</i>	4	13834 8612
Orleans to Bourges (Central).	70	—	—	—	2450 —
Orleans to Tours.	72	600,000	—	5	3850 1796
Paris and Orleans.	82	2,011,720	44	12 <i>s.</i>	9244 7500
Paris and Rouen.	85	2,082,916	35 <i>s.</i>	9 <i>s.</i>	6884 5661
Rouen and Havre.	50 <i>s.</i>	—	20 <i>s.</i>	4	2623 —
Strasburg and Bâle (monthly).	98	—	8	1 <i>s.</i>	0080 16227
West Flanders (monthly).	—	—	1 <i>s.</i>	—	4615 —

Total earnings for last week, £178,975, being an increase of £25,091 over last year.

THAMES TUNNEL COMPANY.

The number of passengers who passed through the Tunnel in the week ending Nov. 6, was 18,037; amount of money, £75 3*s.* 10*d.*

PRICES OF MINING SHARES.

BRITISH MINES.

BRITISH MINES—continued.

BRITISH MINES.

BRITISH MIN

TIN VALE MINING COMPANY, ST. NEOT,

COUNTY CORNWALL.

1000 parts, or shares, of £5 per part, or share.

NOW AT WORK ON THE "COST-BOOK" PRINCIPLE.

CHAIRMAN.

ROBERT OWEN ALAND, Esq., Gerrard-street, Soho-square.

DIRECTORS.

JOHN POSFORD OSBORNE, Esq., Ardleigh Park, Colchester.

JOSEPH CARRINGTON RIDGWAY, Esq., Roshampton Lodge, Roshampton.

BENJAMIN FORRESTER SCOTT, Esq., Northampton Park, Ball's Pond.

BARTHOLOMEW DAWES, Esq., Soho-square.

WILLIAM W. MANSELL, Esq., Dorchester-place, Blandford-square.

CAPTAIN OF THE MINE—Mr. John Floyd, Harrowbridge.

SOLICITOR—John Butler, Esq., 134, Tooley-street, Southwark.

BANKERS—Messrs. Ransom and Co., London.

OFFICES—No. 4, SALISBURY-STREET, STRAND, LONDON.

PROSPECTUS.

This mine sett is situated at Harrowbridge, in the parish of St. Neot, in the county of Cornwall, on the banks of the Dras River, and extends over about 200 acres of mineral land. It is held on lease for 21 years, from the lords of the manor, at a royalty, or due, of £15th, and totally free from stamping or dead rent.

Five tin lodes, underlaying south, have already been opened. A shaft has been sunk about 10 fathoms, and two adits driven—one about 80 and another 20 fathoms. The first adit in the chief adit, marked A on the map, has already been opened 10 fathoms to the east, and about 30 fathoms to the west, on the course of the lode, from which ore is produced, and a considerable quantity is now on the bank, ready for stamping.

The second adit, marked B on the map, has been driven 20 fathoms on the course of a lode, of most promising appearance.

Five pairs of stamps are in course of construction, as well as all necessary machinery for carrying on the works efficiently; and Captain Floyd asserts that returns will be made before Christmas.

The ore is in the best description, being free from compound.

The tin streams are considerable: they have been secured also for the company, at a royalty, or due, of 1-12th, and arrangements have been made for working them on tribute.

The freehold of land sufficient for the erection of workmen's cottages has likewise been obtained, and the quantity of granite which abounds in the locality renders building cheap.

The operations of the company are carried on under the "Cost-book" Principle, which exempts the company from the provisions of the Act for the Registration of Joint-Stock Companies (7 & 8 Vic., cap. 110), the 63d section of which enacts—

"Provided always, and be it enacted, that nothing in this Act contained shall extend, or be construed to extend, to any partnership formed for the working of mines, minerals, and quarries, of what nature soever, on the principle commonly called the Cost-book Principle."

Under the "Cost-book" Principle, shareholders have the right of determining their responsibility, by giving notice of their intention to relinquish their shares, and on forfeiture of all previous payme ts. The 15th clause states—

"That any adventurer, or shareholder, may determine his or her responsibility or liability to the affairs of this mine, upon his or her giving notice, in writing, to the purser of the company for the time being, of his or her desire of retiring from the company; and, also, upon depositing with the said purser the share or shares held by him or her, and signing a relinquishment of all claims or demands on the company in respect to such share or shares."

The present losses, in consideration of the transfer of the lease to the company, to be paid the sum of £1000 cash, and to have one-ninth of all profits arising from the mine, until a further sum of £2000 shall have been paid to them.

Applications for shares to be made at the offices of the company, 4, Salisbury-street, Strand; John Butler, Esq., solicitor to the company, 134, Tooley-street, Southwark; J. Lane, Esq., mining shareholder, 75, Old Broad-street, City; and Messrs. Oliver and Co., stock and share brokers, Coggeshall, Essex—where prospectuses and every information may be obtained.—Prospectuses can also be had at the office of the *Mining Journal*, 26, Fleet-street, London.

REPORT OF CAPTAIN W. H. WHITFORD, APRIL 27, 1847.

The above mine is situated in the parish of St. Neot, contiguous to the celebrated Dras River, on the well-known estate of Harrowbridge, embracing a spacious and extensive valley, bounded on the west by high hills, of a pleasing and graceful declivity. The bottom, or valley, has been streamlined for tin during the lapse of ages, and yet its stores are unexhausted. During the last week, a quantity of tin was sold from these mines, which was raised by streamers, and obtained the high price of £57 10s. per ton. Several promising lodes have been intersected by these streamers, of a very beautiful and rich appearance, which they were inadequate to pursue to any considerable extent. An adit has been driven about 70 fms. through a granite stratum which is perfectly congenial for tin—several rich branches having been cut in this cross-cut, which will come in contact with the lode in driving west, at which point (reasoning from analogy) we expect a fine course of tin. Rose's lode is about 40 fms. beyond the cross-cut; it was sunk on the depth of 8 or 9 fms., where it was 4 feet wide, richly spotted with tin; but an influx of water prevented the parties from sinking deeper. The very promising character of this lode was the principal inducement to commence the adit; and it is highly probable that more lodes may be cut in driving this adit, as it is a new and unbroken piece of ground. A quantity of tin has been raised from the branches referred to in the adit, which is still to be seen in the mine. There are several collateral advantages in connection with the interest of this mine:—1. The superior quality of the tin.—2. The softness of the ground.—3. The abundance of water, sufficient for any kind of machinery. From the whole, I believe it to be a first-rate speculation.

REPORT OF CAPTAIN JOHN FLOYD, SEPTEMBER 2, 1847.

The first adit level is driven south 90 fms., and intersected the north tin lode in the east and west ends; it is 2 ft. wide, producing good tin; the remainder part of the lode (exclusive of the tin) is quartz, mica, and black capels, which composition is the forerunner of abundance of tin; the said ends will now pay for working—I mean, pay its own cost; the ground by the side of the lode is soft granite, and can be driven or worked for the low price of 50s., to 60s. per fm., and very little good tin will pay the expenses, but in the said adit there is a great portion of good tin. From the north lode the adit level is continued on south 8 fms., and cut the middle tin lode, which is 3 ft. 6 in. wide, and, in a word, exactly the same properties as the north lode. From the middle lode, 15 fathoms further south, there is the great south tin lode; a shaft is sunk down about 10 fms., which has cut the lode in the shaft 6 ft. wide, producing very large quantities of tin-stuff; we have to sink on the course of this lode 34 fms., to have a communication with the adit level that will make the mine between 40 and 50 fms. deep at the adit level—so you can see what high tin ground there will be to work on; and, it is my opinion, we shall make large returns of good tin from the great south lode above the adit level, exclusive of the north and middle tin lode. We have also driven another adit, marked B, 30 fms. due west on the course of a recently-reopened lode in the central part of the sett—the lode is most promising; it is 3 ft. 6 in. wide, making two regular wells, composed of blue capels, mica, quartz, and tin. It is my real opinion that when we have driven 50 fms., further to the west, we shall intersect the great canister lode, where we shall have abundance of tin; the strata on each side of the lode is a beautiful granite—good standing ground. We are paying £5 10s. per fm. for driving. The tin raised in this district is superior to any other part of the county, and realizes the best price. There are many other lodes on the sett, which are very extensive, and there is sufficient water-power for machinery, which will effect a great saving, for no steam-power will be wanted. The roads are good, and the mine is not far from the smelting-house.

RULES AND REGULATIONS.

- That the name of the company shall be the "TIN VALE MINING COMPANY."
- That the capital of the company shall be divided into 1000 parts, or shares, and that no adventurer, or shareholder, shall outlive any part, or share, less than 1000th part, or share.
- That an immediate call of £2 per part, or share, be made.
- That no other call be made without the consent of the shareholders, at a public meeting, convened for the purpose.
- That if any adventurer, or shareholder, shall omit or refuse to pay the present, or any future, call for the space of one month, after the same shall have been made, and due notice thereof given to such adventurer, or shareholder, then the share or shares of such adventurer, or shareholder, shall be forfeited, and become the property of the remaining shareholders, or shareholders.
- That a board of directors be appointed, to consist of not less than five adventurers, or shareholders, and that each member of such board shall, at the time of his election, and during his continuance in office, hold, and continue to hold, 25 shares in the company, at the least; and that Robert Owen Aland, Esq., of Gerrard-street, Soho-square, in the county of Middlesex; and that Joseph Carrington Ridgway, Esq., of Ardleigh Park, near Colchester, in the county of Essex; Benjamin Forrester Scott, Esq., of Northampton Park, Ball's Pond, in the county of Middlesex; Bartholomew Dawes, Esq., of Soho-square, in the county of Middlesex; and William Washington Mansell, Esq., of Dorchester-place, Blandford-square, in the county of Middlesex—shall be the first and present board of directors, with power to add to their number.
- That the board of directors shall have power to appoint, dismiss, and reappoint all officers and servants, and to do all acts necessary for the furtherance of the objects of the company.
- That W. W. Mansell, Esq., shall be the purser of the company.
- That a general meeting of the adventurers, or shareholders, of this mine shall be held at the offices of the company, on the first Monday in January, in every year, and shall be convened by the purser, in the manner hereinafter directed with respect to special general meetings.
- That the purser for the time being shall be at liberty to call a special general meeting of the adventurers, or shareholders, of this mine, as and when he shall consider advisable to propose.
- That such general and special meetings shall be convened by written notices, to be sent to each adventurer, or shareholder, 14 clear days before the day fixed for such meetings; and such notices shall be deemed as sufficiently served, if sent by post to the address of each adventurer, or shareholder, as entered in the cost-book.
- That every adventurer, or shareholder, shall be entitled to a vote at all the meetings of the company, for every share held by him or her.
- That every adventurer, or shareholder, who may be prevented attending at any meeting of the company as aforesaid, shall be at liberty to appoint any other adventurer, or shareholder, to vote and act for him or her by proxy—but every such proxy shall be in writing, and shall continue in force only for the particular meeting for which the same shall have been given.
- That no adventurer, or shareholder, shall sell or dispose of his or her share or shares in this mine without giving notice, in writing, to the purser—such notice to be given, or left, at the offices of the company, and to contain the name and address, in full, of the party to whom such share or shares, or are proposed to be sold.
- That any adventurer, or shareholder, may determine his or her responsibility or liability with respect to the affairs of this mine, upon his or her giving notice, in writing, to the purser of the company for the time being, of his or her desire of retiring from the company; and also upon depositing with the said purser the share or shares held by him or her, and signing a relinquishment of all claims or demands on the company in respect of such share or shares.
- That all questions brought forward for discussion at all meetings of the adventurers, or shareholders, shall be decided by the majority of votes; and, in case of an equality of votes, the chairman of the meeting shall have a vote and a casting vote.
- That the general accounts of the company for the current expenses of the mine shall be made up and entered in the cost-book on or before the last day in each month.
- That a duplicate of the cost-book shall be kept by the purser at the mine, and that the cost-book, and the duplicate thereof, shall be at all times open to the inspection and examination of the adventurers, or shareholders, of the company.

NOTICES TO CORRESPONDENTS.

It will at all times save much trouble, and frequently considerable delay, if communications are simply directed—

TO THE EDITOR,

Mining Journal Office,

36, FLEET-STREET, LONDON.

Also, to avoid trouble, Post-Office Orders should always be made payable to WILLIAM SALMON MANSELL, as acting for the proprietors.

"M. D." (Newcastle).—We feel obliged to our correspondent for his diagram of a double action pump; but it is no novelty, being on precisely the same principle as one we mentioned in last week's Journal, by "J. D. T." and various others formerly described.

DOUBLE-ACTION PUMP.—In Mr. Ennor's letter (Journal of the 23d October), for "care should be taken to have the water-way in the bucket as large as it would admit of, as a double quantity of water has to pass through it in its ascent," should be "in its descent," as the valves must be closed in the bucket's ascent, otherwise it could draw no water one way.

We return our best thanks to our esteemed correspondent for forwarding a volume of the *Encyclopaedia Londinensis*, containing an article on the Mines of Anglesea. Having, however, published a more detailed account in the *Mining Journal* of May 30, 1846, there is no necessity for repetition. We have forwarded a copy of the Journal of that date.

"N. E." (Wansford, Tawton).—We quite agree with our correspondent, and endeavour to append the locality to the first notice of all new adventures, as a guide to our readers. Should "N. E." be in possession of any particulars, we should feel obliged if he would favour us with them for publication.

WHEAL ANNA MARIA.—The communication of "Nika" must be authenticated; we shall, however, be happy to publish the report of Captain P. Raby, if a copy be furnished us.

"P. B."—Mr. Charles Wye Williams, some years since, took out a patent for a process of manufacturing and compressing peat: a full description of which, with many other interesting particulars, will be found in Sir C. Kane's *Industrial Resources of Ireland*.

"J. D. T."—In our description of his double action pump, in last week's Journal, we should have said—"Two barrels for the current of water to pass at both the up and down stroke of the piston, with one working barrel placed between them."

MINES OF IRELAND.—In the absence of communications, with reference to the Ballynah, Cronebane, and Tigray mines, we reserve, until next week, our observations on that district; and, in the meantime, have to direct attention to two letters, from correspondents, which merit attention, and which will receive the notice they deserve.

The *Mining Journal* is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, NOVEMBER 18, 1847.

We are beholden to the *Cornwall Gazette*, of last week, for two things—namely: for a perfectly civil, and a perfectly inconclusive, reply to a few remarks in this Journal of the 30th ult. We have this moment indicated our opinion of the *Gazette's* reasoning—we have a worse opinion still of its arithmetic. Without inviting our contemporaries back to the recollection of his school days, may we be permitted to inquire, what is the middle term of 300 and 300,000? His own answer will be the refutation of his statement; for it will then be seen, that any loss to the mines of Cornwall by the tariff regulations of 1842, less than 150,000 per year, will be perfectly consistent with, and a literal verification in, all the units of the sum of the statement with which the *Gazette* is fighting. Our short article, of this day three weeks, is transferred to the columns of the *Gazette* with perfect fairness. Without the dropping out, or the interpolation of, a single word; the text of our observations is, therefore, present, in proof of the error of their's. Our words, in substance, were—that the loss to Cornwall by the changes in question, was nearer the small sum mentioned by us than the great one affirmed by the *Gazette*. If we thought that any such haberdasher's item as that selected, or one of 10 times its value, was nearly sufficient to cover the Cornish loss, we should have said, considering the magnitude of the aggregate returns practically, that the tariff of 1842 had conceded to the mines of Cornwall the benefits of the *status quo*. Without fixing ourselves to a few hundreds, or a few thousands, on a subject so large, we meant to affirm, that the statement of the *Gazette* was a great exaggeration; and, since then, to prove that it was not so, the *Gazette* has suddenly covered itself with a cloud of figures, by which the truth may be as effectually obscured as disclosed. It takes up the case of the Fowey Consols—this mine is a great gun with the Protectionists—its depths are a plumb line into which they dive day by day for arguments against the true doctrines of trade. The produce and the profits of that mine fell off, it appears, considerably upon the remission of the tariff; but Sir C. LEMON, the best authority on the subject in Cornwall, says—there is no necessary connection between the tariff and the reduced produce of the mines—that, though the events followed in chronological succession, they cannot be placed in the relation of cause and effect, any more than Tenterden steeple and the Godwin Sands.

In point of fact, a new rival had been many years waxing to maturity, and had now come into all the markets of Europe against us. He walked up to the gates of the protected kingdom, seeking admission. We shut our portcullis down, and, arming our walls, endeavoured to make the ditch impassable. Other mercantile communities were less exclusive: they yielded to a reasonable and patient solicitation; and the ores of Cuba and Chili took the place of British copper ores in the general market of Europe. The suffering, therefore, subsequently to 1842, arose out of the non-relaxation of our tariff at an earlier period—not that we, in some measure, softened its stringency then. The elements of our loss were thus laid anterior to 1842—it was at that time that their force and potentiality first presented itself. But the tariff meddled with more things than the metals and their ores. It lowered the duty on timber, tallow, and hemp—all articles of first-rate consideration in mining works; and it permitted foreign ores to come in for smelting and reduction. Let a just account be taken of the gains arising out of these concessions of the much-abused tariff; and it will be seen, that the mountain which loomed so large in the distance, and which, seen through certain optics, seemed filled with chariots and horsemen, is one of the smallest of the Alps, and full of smooth paths, and green and fruitful inclosures; or, to speak less figuratively, the damages laid in this case by the Truro plaintiff, are unaccountably and extravagantly in excess. However largely we differ in the intermediate reasonings, we are happy to know that the *Gazette* concurs with the *Mining Journal* in its conclusions; if in its conclusions, in their corollaries, also—first, that, as the individuals having the present incumbency of the Cabinet chairs are the political rivals of those who wrought so much mischief in Cornwall, it is but reasonable that Cornish journalists should be less bitter against the least offending party of the two; and, second, that the mining interest—of which the *Gazette* claims to be the advocate—suffers a disservice, when it is represented as a deeply suffering and a nearly ruined pursuit; and not affording, as, in the large majority of cases, it is doing at this moment, to those who adventure in it, a full and liberal remuneration.

We trust we may now deliberately and advisedly say, that there is a clear improvement in the trading and commercial pulse of the kingdom. The patient that was sick—and so seriously sick—is at length decidedly convalescent. Money is manifestly easier, both in town and country. Consols, which were a fraction below 80, are now a fraction above 84; this steady rise of 4 per cent., in less than a fortnight, is much better than that fast and feverish elevation, which is as likely, as in anything else, to terminate in a fall. The precious metals also are finding their way, in fair quantities, back into the Bank of England, from which they had been long flowing out, in payment of our vast importations of corn, flour, and other descriptions of food. The assumed maximum discount of 9 per cent. is scarcely anywhere paid—the necessary accommodation being currently afforded at 4 or 5 per cent. Firms, also, which, in the crisis of the pressure, and under circumstances, as it now appears, of unnecessary alarm, were driven to the suspension of their payments, are resuming business; and the long thunder-storm we have had has tended, most undoubtedly, to clear and purify the commercial atmosphere. Mining property has improved with the general improvement; sellers are less numerous and less anxious, and buyers

are increased in number and in importance. Quotations are firmer, and, in many cases, higher; and the general look of all interests is up, and their march, steadily forward. There is, we think, but one feature in this great public case for which we are not thankful—namely, the numerous discharges of workmen engaged in railway works, and the comparatively slack employment in the manufacturing districts. We fear that, as the winter hastens on, this will be found an increasing element of inconvenience and distress. But we can endure all, and assuredly reckon on passing shortly into a region of showers and sunshine, in a national sense, if the improvements, which have now happily commenced, go steadily forward, to their consummation.

In another column will be found a letter from a correspondent, on the subject of working the mines of Ireland, from which it will be seen, that it is not from want of enterprise in the country—not from any difficulty of providing capital—not from the absence of a plenitude of labour, that the mineral riches of the strata of Ireland are so sparingly explored—but from the imbecile and cruel enactments of the laws made by the Irish Parliament themselves, in the time of the first George. That upwards of a century ago—when but comparatively little was known of the nature and extent of the mineral wealth of Ireland; and when anything to better estates for inheritors, under the law of primogeniture, was eagerly supported by the proprietors of the soil—such a law, or any others equally absurd, should pass, is not surprising; but it is surprising, not to say a disgrace to those proprietors in Ireland, of land, where valuable minerals are known to exist, that in the present enlightened age, when it is so clearly defined, that all restriction on productive industry are evils which cannot, and must not, be tolerated, a law preventing the leasing of mineral land, unless at a most exorbitant rent, should have been so long a stain on the statute book.

Many of the mineral lands of Ireland are held in trust for minors, lunatics, and by ecclesiastical bodies, and the wealth beneath their feet is suffered to lie unproductive; while, if this most absurd of all absurd laws was repealed, and owners and trustees allowed to make unfettered bargains with capitalists and adventurers, a source of wealth would be opened up in the Sister Kingdom, which would give employment to thousands, enrich both the estates and the enterprising adventurer, and prove a blessing to the country at large. We noticed, in the *Mining Journal* of last week, a meeting which had been held in Dublin on this subject, at which Mr. GRATIAN presided; and it is with much pleasure we observe, that the effects—or, rather, the prevention of beneficial effects—of this suicidal law, are awakening the most lively attention; and we trust the next session of Parliament will not be allowed to pass, without its total and unconditional repeal being effected. If a bill for the purpose was introduced, we cannot suppose any Member of the Legislature so insane, as to offer the slightest opposition.

It is of all things important, that

PROGRESS OF FRENCH MINING INDUSTRY.

[FROM OUR PARIS CORRESPONDENT.]

The Government has very wisely determined to take no notice of the remonstrances of the Havre, Dunkerque, and Nantes shipowners against the coal for the Post-office being allowed to be conveyed to its destinations in English vessels. The adjudication will, consequently, take place on Friday, as previously announced. I hear that the French people mean to make a bold push to get the lion's share of the contract; but it is to be hoped, for the sake of the Post-office itself, that they will fail, for experience has demonstrated, over and over again, that their coal is unfit for steam-vessels. Even the Grand' Combe coal, which is almost the only coal in France which has even the pretension to vie with English, has been pronounced, by the most competent authorities, to be poor trash, notwithstanding the certificate of merit given it some little time ago by the Minister of Marine. Had the Post-office people acted fairly towards the public treasury, they would have expressly excluded the Grand' Combe coal, instead of formally ratifying their willingness to receive it, as they have done, in the published conditions of the contract.

The Customs department has just issued the following circular to its officers:—

Paris, Nov. 9.—The custom-houses open to the importation of iron in bars or *au maréau*, were authorised, by the circular of 24th December, 1822 (No. 774), to apply provisionally to such iron the rates of the tariff of 1814, provided there should be no doubt as to its origin, or as to the mode of fabrication; but the administration has at all times reserved to itself to decide definitively on these admissions, and it has recommended that, on the one hand, there should be addressed to it the proofs produced by the interested parties, with a certificate, stating the result of the verification of the service; and, on the other hand, to preserve in the office specimen of each of the descriptions of iron imported, in order, that, if necessary, they might be submitted to the examination of qualified commissioners of the Government. This mode of proceeding is not without inconveniences. Independently of the extensive correspondence to which it gives rise, the necessity of having recourse, in every case, to the administration, occasions delays, from which the interests of trade may suffer. The taking of specimens, also, entails formalities, and causes a loss of time, which is both embarrassing to commerce, and to the service itself. Notting, however, shows that any attempt has ever been made to usurp the benefits of the moderate duties reserved to the iron from the north by the law of 1822; and, besides, if such attempts had been made, they would, undoubtedly, have had no chance of success, the *employés* having now acquired all the experience necessary to distinguish easily the iron treated by wood and *au maréau*, from that manufactured by means of coal and *au lamain*. Regard being had to these various considerations, I have thought there is no longer any reason to maintain the intervention of the administration, for the application of the benefits of the exceptional dispositions stipulated by the law of 27th July, 1822, in favour of the descriptions of iron which come from countries in which the iron-works employ neither coal nor the *lamain*. In consequence, I have, with the advice of the Council of Administration, decreed the following dispositions, which are to take effect immediately on the receipt of the present communication:—Every time that the conditions required by the law shall have been exactly fulfilled; and, when the proofs indicated by the circular, No. 774, shall have been produced, and ascertained to be in order, the directors may, after examining the papers, which shall be laid before them, allow the admission of the iron under the reserve, that at the verification the service shall not have raised any doubts as to the nature and origin of it. They may even dispense in this case with taking any specimens. When, on the contrary, doubts shall arise, either as to the nature or origin of the iron, or as to the regularity of the proofs produced, a reference shall be made to the administration, to which, in such cases, the right of decision remains confined. All the papers shall be addressed to it as at present. If the doubts shall exist as to the mode of manufacturing the iron, specimens of it shall be forwarded, in order that they may, if necessary, be submitted to a legal examination. It is understood, that the new method of proceeding, which I have just indicated, shall be followed with respect to the iron imported by the land frontier, which has been admitted by the law of 2d July, 1826, to enjoy the benefits of the moderate duties, as well as to that which may arrive by the seaports designated for that purpose. I request the directors to give the necessary orders for carrying into effect these dispositions; and, also, that they will communicate them to the persons interested in the trade.—*Tu. Gastram*, Councillor of State, and Director-General of the Board of Customs."

The official *Mouiteur* announces, that the Ministers of War and Public Works have just nominated a commission, which is charged to draw up a Royal ordinance, containing the modifications which it may be considered necessary to introduce into the law of 21st April, 1810, respecting mines, in order to make it applicable in Algeria, and to put it in harmony with the present situation of that country.

The London directory of the Mining Company of the Asturias is calling on the French shareholders for a further payment of 17. per share—viz.: 10s. on 4th December, and 10s. on 4th January.

The general assembly of the Company of the Antonim and Mines Reunies is called for the 25th November, at Paris; and that of the Coal-Pits of Blanzy remains fixed for 7th December, at Chalon-sur-Saône.

The weekly report of the 4th, of the St. Dizier market, sets forth that the pretensions of dealers were still far a fall, and, in consequence, the position of affairs was no better than previously. The *fers battus* were sold at 355 fr., and the *fers laminés* at 355 fr. to 360 fr. according to the iron-works, and the importance of the purchases, the deliveries being at St. Dizier. The *laminés* delivered at Paris were at 360 fr. The *fentes blanches* were without purchasers, and were offered at 150 fr. at St. Dizier.

Some time ago, I mentioned that the Minister of Marine had ordered an amalgamation of the different descriptions of copper used for sheathing vessels in France and in England. It having appeared from this that the copper undergoes deterioration according to the nature of the sea in which the vessel may have navigated, a series of experiments on different sorts of copper, which have served in different seas, is to be undertaken. One of the daily newspapers announces, that in consequence of the quantities of iron ore diminishing in the departments of the Gironde and the Landes, negotiations have been opened with the Spanish Government, in order to obtain from it the removal of the prohibition to export the ores of Biscay, which, it is said, are not used in that province. It is added, that these ores could be treated with great advantage in the French departments of the Gironde and the Landes; and, it is proposed, that they shall pay an import duty similar to that of the ores of the Col de Puymaurens, the exportation of which has been authorised by the Spanish Government, in favour of the iron-works of Cordanga, and of the district of Andorre.

The Lyons and Aragon Railway Company will, from the 20th, pay to the shareholders the first dividend of 91 fr. per share.

The French Government has to-day disposed of its loans of 250,000,000 fr. (10,000,000 fr.) The house of Rothschild has taken it at 75 fr. 25 c.—*Paris, Wednesday.*

BELGIUM.—You lately published an account of the *importations* of coal, iron, &c., made into France during the first nine months of the present year, compared with the corresponding periods of 1846 and 1845; here is an account of the *exportations* made by Belgium during the same periods:—

	1846.	1845.
France.	France.	France.
Portative arms.	3,578,354	2,842,920
Coal.	1,214,286	895,826
Iron fentes en gausses et fonte éprouvée.	81,235	44,850
Bails.	8,924	8,032
Fonte ouverte.	711,834	266,259
Works in fer battu.	726,838	462,760
Nails.	4,158,712	3,621,301
Machines, &c., complete works in iron.	1,597,003	1,581,396
Ditto, detached pieces in iron and cast-iron.	583,741	401,124
Zinc (raw).	8,757,412	8,491,758
Zinc, laminé.	1,600,244	995,300
		994,704

These returns are of a very satisfactory nature to Belgium; but the Belgians are labouring to make them more satisfactory still; and in his speech from the throne, delivered yesterday (Tuesday), the King announced that the Government would exert itself actively to find new markets for Belgian products—among which we may be certain that metallurgical products will not be the least to be thought of.

The cast-iron manufactory at Liège, has been ordered to construct some cannons for the Spanish Government. The orders sent to this establishment are becoming very considerable. I only hope that its prosperity is not increasing at the expense of that of England.

The company of the coal-pits of Bonner et Veine à Mousch, has been authorised to raise a loan, or rather to increase its capital, by emitting 500 new shares of 1000 fr., which are to bear 6 per cent. interest.

REMEDY FOR FOUL AIR IN MINES.—We have received a communication from Mr. D. Clark, of Launceston, in which he states, that having resided for years in the mining districts, he has long considered the complaints of miners respecting the accumulation of foul air in many levels, winzes, &c.; and, after long attention to the subject, has discovered the means of not only remedying the existing evil, but of keeping the air perfectly pure, at a moderate cost. This invention applies to mines, of either metal or coal; and, if our correspondent has really succeeded, in one of the most important details in mining operations (and he appears very sanguine of his success), we think he will be well supported. He states, he is open to negotiate with any parties connected with mining, for the use of his discovery, which he would prefer laying before the public, rather than sell as a private monopoly.

ON THE VENTILATION OF MINES, TO PREVENT ACCIDENTS FROM EXPLOSIONS BY GAS.

BY DR. JAMESON.

It would be superfluous to descant on the vast importance of the mines—these of coal especially—in a manufacturing country like Great Britain, the natural wealth of which so essentially depends on this great branch of industry; and the proprietors of coal mines are, no doubt, fully impressed with a sense of their onerous responsibility, and of their duty to afford every possible protection and comfort to the industrious class of men employed in a most perilous and arduous occupation—that of raising from the depths of the earth the coal, so important a material of national and individual wealth.

It appears, from the Report of the Parliamentary Committee, which sat in 1837, that accidents from explosions in mines have become more frequent since the introduction of the "safety lamp" of Sir Humphrey Davy. This may, indeed, be partly owing to the extension of mining operations, as well as to an undue reliance on the security afforded by the lamp. Ventilation appears still to be regarded as the chief, and, indeed, the dernier, resort in these dangerous operations. Its iniquity, however, has been but too clearly proved by the numerous fatal disasters, which have occurred, even in mines considered safe and well ventilated, as shown by the witness before the said Committee. Ventilation, it seems, cannot be carried beyond a certain degree, without becoming a hindrance to the workmen, by blowing out the light; and, however strong the draught may be, the explosive gas will still lurk in the recesses, and cavities. Sir Humphrey Davy has observed, that the fury of the blast in the North—where explosions so frequently occur—were perfectly well ventilated, and that "they could not be better ventilated."

Little improvement, indeed, can be expected whilst the present methods are pursued—whilst freedom from the fire-damp depends on the continual course of the air, and expelling the gas by force; or, whilst it is allowed to accumulate under vaults and recesses, and to be even purposely *boxed in*, or confined by walls, stoppings, trap-doors, &c. And passing stances to say, all this cost—all this trouble, anxiety, and peril—are encountered to remedy an evil arising from the confinement of a subtle fluid, which is, of itself, ever seeking to escape; and to effect which it requires no other assistance than a free passage to the outside.

Amidst all the illustrations of eminent chemists and philosophers, as well as of practical men, for preventing the destructive effects of inflammable gas in mines, it appears rather surprising that their views should have been confined to such methods as that of consuming the gas in the mine, or expelling the dreaded enemy by force, by currents of air, by dashing and brushing it out of the vaults and recesses with their clothes, by shutting it up in the mine, by stopping the air, or by getting rid of the gas—means which, one would think, might have been suggested on the slightest consideration of its physical properties—viz., its levity, or inferior gravity compared with common air; and its consequent tendency to fly off into the atmosphere above, which it will constantly do, unless impediments interpose to prevent its ascent. It has no tendency to pass horizontally much less downward, being buoyed up by the superior gravity of the atmospheric air—so that, on its effusion from the mine, it instantly ascends to the roof, and there lodges in the higher parts of the vaults, recesses, and excavations, where it gradually mixes with the atmospheric air, forming explosive compounds.

But one chief point seems not to have been adverted to by the miners, nor even by those who have professed to make it their study—namely: that it is the *confinement* of the gas only which causes it to explode with destructive violence when fired; that it will not explode without violence, when free or unconfined, any more than loose gunpowder, which, ignited, flashes without violent concussion, or loud detonation. It is to this inadvertence, I am inclined to think, we may attribute all the obscurity and misapprehension, which prevail on the subject, and the reason why the natural method of clearing the mine (otherwise so obvious) has not been seen and practised. Yet has it long been known, that condensation is requisite for augmenting the explosive power of the gases—*in fact*, that they can scarcely be exploded without some degree of condensation, which implies confinement. It should be considered, that carburetted hydrogen is only half the weight or specific gravity of atmospheric air at the surface of the earth; and the greater will be the difference the lower we proceed. But, however small (owing to mixture) the difference may be in their specific gravities, the lighter gas will still be forced on in an ascending course (wherever unobstructed) by the buoyancy of the atmosphere, and with such facility as to prevent its accumulation in the mine. But, supposing the gas were collected in a large body, and had time to form the most explosive mixture where it has a free exit (which, by the way, is supposing an impossibility), still its ignition could not be attended with any violent explosion, blast, or concussion—which could only occur from its being confined, by some opposing medium, within certain limits. It should be well understood, that the fulminating power, or concussive violence, in the explosion of gases, depends on two coincident or concurrent causes—namely: the rapidity with which they ignite, and the restraints, natural or artificial, which may oppose their sudden expansion. When either of these causes is absent, their combustion, or ignition, will be attended with little or no violence:;

Deep mines are thought to be more infested with the fire-damp, than more superficial ones. There are two causes to be assigned for this:—first, in those mines which lie near the surface, more of the gas exhales, or finds its way into the atmosphere, than from deep ones; secondly, the pressure of the superincumbent atmosphere, and the consequent condensation of the gas, will evidently be greater, in proportion to the depth of the mine. When, therefore, in a deep mine, the gas becomes confined and pressed up under an arch, or vault, remaining long therein, it forms an explosive mixture, and, when being ignited, detonates with great violence. Again, it appears, that a considerable time is required for the gas to mingle with air, so as to form an explosive mixture—*as evinced by the more explosive state of the damp in old wastes, or old excavations*; and, also, by the practice of consuming the gas in the mine before it accumulates in great quantity, or becomes explosive, by mixing with atmospheric air. This is done by means of a candle, fixed to a pole; the operator, being at a distance, raises the candle to the vault or roof, and so fires the carburetted hydrogen.

These facts considered, why not, I would ask, take advantage of the inherent property of carburetted hydrogen to ascend, by allowing, from the moment of its emission, a free and unobstructed escape out of the works. This requires no ventilation, or forcing of currents of air through the mine, but simply a removal of all obstacles to its natural course; which is to be done by cutting away all depressions in the roof, so as to form a gas-way drift, or channel, overhead, ascending outwards towards the shaft, or to a peroration (one or more), made by boring down from the surface, or by an additional small shaft: either or both being used, according as local circumstances may require—the grand object being, to permit the fire-damp to pass off into the atmosphere as fast as it is generated or evolved in the works. As to the usual system of stopping off the damp, forming other pass-ways, and driving it about from one part of the mine to another, often through long circuitous passages, at vast trouble and expense, and the frequent destruction of human life, all this, we think, might be avoided, by simply giving the gas its own way.

By the method now proposed, the mine might, we presume, be rendered not only safe, but comparatively healthy, and more comfortable to the miners; enabling them to work with open lamps, or candles, free of all danger from explosions (at least wherever carburetted hydrogen forms the explosive gas); and thus avoiding the enormous expense of a numerous retinue of attendants, with Duy lamps, the ventilating, brushing, stopping, and trap-door system, together with the services of overmen, viewers, under-views, and trappers—by which system the safety of the mine, if safety it can be called, is committed to the fearful contingencies of unremitting care and vigilance in such attendants: It is true, that, if, on the one hand, many expenses are saved, so, on the other, some additional work will be required in the method proposed—such as excavating the ascents, boring, or occasionally forming small shafts. These perforations should be about the central part of the excavation in actual progress, or rather towards the crop, in mines having a considerable dip—taking care that the roofs of all the galleries are carried with an ascending slope towards the surface—at least, that no depressions are allowed to stop its progress along the roof, a communication being kept open between the galleries from below upwards. It is evident that this plan will, in general, be of more easy execution, where there are considerable dips in the strata, than where it lies horizontal. In the latter case, however, it is not of frequent occurrence; and, when it does happen, a shaft, or peroration, being made about the central part of the works, or coal-field, required to be cleared, the costs of giving the necessary ascents to the galleries will, it is presumed, be very great.

This method is founded on self-evident and demonstrable facts, which need not be further insisted on here. The principle, indeed, is just that of the *drainage of land reversed*—the water tending downwards, by its gravity; and the gas ascending, from its levity, or buoyancy. But the gas will move with vastly greater velocity than water—the mobility of all fluid being proportionate to their levity. With a very gentle ascent, then, it will fly off with great rapidity; and, when unobstructed in its course, will give little time for the formation of an explosive mixture with atmospheric air; or, if so formed and fired, a free exit will preclude any violent concussion. At a distance from the main shaft, it might often be found advantageous, for the better circulation of air, as in ordinary cases, to have a downcast shaft, or peroration; and at the upcast one, if thought desirable, a tube might be carried through a furnace, to take off the heavier damp, or foul air. Although the principle here proposed ought to be made our grand resort against accidents from explosive gas in mines, still it will often be desirable to employ lamps in different parts of the mines which have not been prepared, or during the progress of such preparation; and, indeed, in divers situations they must frequently be called for. We would, therefore, be undesirous by no means to condemn the use of safety lamps, and the choice of these should be left to men of practical science. The experiments of a very accurate chemist, Mr. Pereira, seem to have proved that the lamp of Upton and Roberts is the only one strictly entitled to the denomination of a "safety lamp"; and the same is borne out by the testimony of the late Dr. Birkbeck. The superiority of this instrument, if such it be, ought to be made universally known, and, in that case, adopted, in preference to all others. At the same time, the fire-damp should be compelled to work in an atmosphere of hydrogen, even though an inflammable lamp were discovered. In mines where many slip dykes, or dislocations, occur, the method here proposed, by self-reversion, will, doubtless, be attended with more trouble than where the seams are unbroken; but, considering the important end to be attained, and the many expenses of the present methods to be avoided, we are disposed to think that no insuperable difficulties, in any situation, will present themselves—none which may not be successfully overcome by the efforts of genius and mechanical skill on the part of the miners and mining engineers.

In commencing new works, it would seem desirable to commence at the summit, or crop, which will lead to the more productive seams, and afford a natural ventilation and discharge of gas, with little additional trouble. In point of fact, in all the more dangerous

coal is the most valuable of the mineral products of Great Britain, and it renders available all the other minerals. About thirty millions of tons are consumed annually in Britain; and the coal trade gives employment to 300,000 persons. There are, in the north, coal to last 500 years; and in Wales, 300. Perhaps abundance exists for 2000 years in Great Britain.

Ballons are now always filled with carburetted hydrogen; and the velocity with which they shoot into the air, when any considerable weight is detached, even in a highly rarified atmosphere, and at great heights, was exemplified in the experiment which proved fatal to Mr. Cocking.

We are aware that, instead of expansion, the compression has been attributed to a *sudden vacuum*, formed by the combustion of the gas, and the consequent rushing in of the air, to fill up the vacuum. But this view is evidently erroneous, and contradicted by facts; for we learn that, in those dreadful explosions in mines, the dead bodies of men and horses, and implements (such as carts, &c.) are most frequently blown towards the shaft; and very often, indeed, they are carried up the shaft, even to a great height, into the atmosphere.

When the Wall's End Colliery exploded, some few years ago, with the loss of 101 lives, it was said to be under the best ventilation, and a constant use of the safety lamp; and the same was the case in a recent explosion, at Harrington—in which all in the mine (forty persons) were destroyed. In all cases, although no survivor is left to tell the tale, some means are found out to account for the accident, as the carelessness of some overmen, or other servant. The force of a coroner's inquest ensures; the usual verdict of "Accidental Death" is returned; the affair is then considered as settled most satisfactorily, and consigned to oblivion.

our mines, where the excavations are not carried on this way, it would be desirable to reverse the operations, and commence the work *de novo*.

In corroborating of the plan now proposed, we have noticed, in perusing the *Minutes of Evidence*, given before the Parliamentary Committee, several statements which are in accordance with the views we have now advanced—showing, too, that practical miners are not unaware of the tendency of the fire-damp to collect in all cavities under the roof of the mine, and affording some idea of the difficulties they have to encounter in clearing it away. Mr. Wood, speaking of couring the air through the works, for clearing off the gas, observes:—"The air is taken along the boards, and brought down through the waste into the working boards again, and so on all the way to the shaft. There are other cases where that mode is not advisable. In some cases, it is necessary that the air should be taken along the face of the workings first, afterwards into the waste, and then carried over the furnace. There are other cases where the discharge of gas in the boards is such that you cannot mix the two together; for, being of different specific gravities, the inflammable air floats at the top, and it requires what is termed, 'dashing of the air,' to mix them." *Minutes of Evidence*, page 62.

The late Mr. Biddle states, that, the deeper the mine, the greater will be the evolution of gas. It is less gaseous towards the crop (or surface); "because I conceive," he says, "that all the gas that can be expelled at the natural temperature of the atmosphere has escaped; and as it gets deeper and deeper, its escape into the atmosphere is only slow."

Mr. Stephenson says, "It is difficult to ventilate so as to make the use of candles safe; there are so many contingencies—the stoppings and doors are so numerous. In extensive workings, it requires a very powerful furnace to drive the air round the whole of them; and, with very little arrangement of the doors or stoppings, a

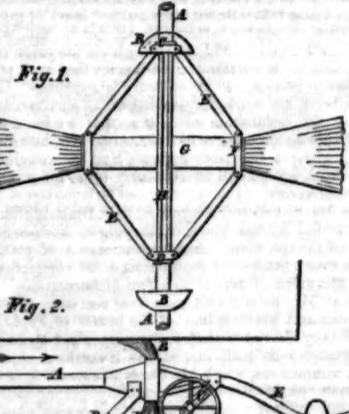
IMPROVEMENTS IN PROPULSION ON LAND AND WATER.

Specification of patent granted to Johan G. Seyrig, of New Lexton, Nottingham, for certain improvements in propelling on land and on water. Patent dated May 8, 1847.

This invention has, for its object, to make available the power derivable from a fall or pressure of water from the height of the water-line outside of a vessel, to any lower point on the inside thereof; and employing such power, in combination with steam, or other power, for the purposes of propelling on water. The specification sets forth several modifications, contained in several sheets of drawings, illustrative thereof, from which, as far as one can see, surrounded by a misty waste of extraordinary phraseology, and the superabundance of erasures and interlineations which this specification rejoices in, it appears that the principal feature of the invention consists in the employment of the external water in such manner, that it is caused to act upon a mechanical arrangement, which the inventor denominates a "turbine"—a wheel, placed horizontally, and formed of curved vanes, or plates, placed vertically, upon which the water acts, and imparts motion thereto, as also the shaft upon which it is fixed. Connected with this turbine, by bevelled gearing, there is a vertical screw propeller, which receives motion from a steam-engine, or other prime mover; one modification of this arrangement consists in ejecting air and water from the inside of the vessel to be propelled. That part of the invention which relates to propelling on land, consists simply in the application of the well-known mechanical arrangement for converting rectilinear into rotary motion, by the traversing of a pin, or stud, along a grooved channel or quick thread cut around a cylinder of metal. The only novelty connected with this part of the invention appears to be, the means by which the steam (employed for imparting motion to the piston, to which the traversing pin before mentioned is attached) is prevented passing from one side of the piston to the other along the said grooved channel, which is effected by the application of a series of sliding or telescopic tubes—one of which is attached to the piston, and moves therewith. The same means are here employed for converting rectilinear into rotary motion, as those employed in regard to that part of this specification, which has reference to propelling on water, with a slight difference in the means adopted for preventing the steam passing along the grooved channel before mentioned. It consists in the application of a cylinder of vulcanised India-rubber, the upper extremity of which is fixed to the cylinder lid, and the lower extremity to the bottom of the cylinder, the piston being fixed thereto, the India-rubber being kept "diametrically" (as the patentee is pleased to term it) distended by springs, which are illustrated by "dots" on the drawings. These little peculiarities, however, form but a slight exemplar of the defects of this document. The claims are for the arrangements, as described and set forth.

Patent-office and Designs Registry, 210, Strand, Nov. 10.

IMPROVEMENTS IN SWEEPING CHIMNEYS.



Specification of patent granted to Lemuel Wellman Wright, of Chalford, Gloucester, engineer, for an invention of certain improvements in machinery, or apparatus, for sweeping or cleansing chimneys, flues, and other similar purposes. Patent dated May 4, 1847.

This invention comprises various improvements, which are severally illustrated by a sheet of drawings annexed to the specification. The principle upon which these improvements are based, consists in rendering available the elastic property of vulcanised India-rubber, for the purpose of enabling the sweeping brushes to collapse and expand, according to the varying size of the flue, or chimney, in which they are to be employed. There is also a new mode of forming an elastic or yielding tube, which shall possess all the properties of universal joints, at the points of junction of each length of tube; this is effected, by fixing a short tube of vulcanised India-rubber over the ends of such tubes after they are brought together, enabling each tube to have lateral movement, independent of the tube adjoining it. As we consider it unnecessary to particularise separately the several arrangements set forth in this document, we shall confine ourselves to the illustrations of two of the methods, as examples of these improvements. The fig. 1 of the accompanying diagram exhibits an elevation of that part of an apparatus to which the brushes are attached; A marks the tube; B, B, caps; C, a collar, fixed upon the tube; D, a collar, at all times moveable upon the tube, B. To each collar there are attached, by pins, any convenient number of rods, E E, of which the diagram exhibits two—the opposite ends of each pair of such rods being connected together by a link-piece, F, against which, and encircling the entire number, there is an endless belt, G, of vulcanised India-rubber, in which the bristles, or whalebone, which form the brush, are fixed; and the size of such belt is such, as to keep the brush in a collapsed state, the expansion thereof being effected by strips of vulcanised India-rubber, being secured by their ends to the collars, C and D—the elastic power of which being greater than that of the belt, G, has the effect of bringing the collars, C and D, together, and thereby effecting the expansion of the aforesaid belt and brushes fixed thereto. In using this brush, the inventor states, that, upon introducing it into the chimney, or flue, he collapses the said belt, by pulling down the moveable collar, and holding it in that position by a catch, until it has reached the top of the flue, or chimney, when, by releasing it, the brush is forcibly pressed against the chimney, and, being moved downwards, cleanses it; but how this holding and releasing is to be effected, is neither shown nor described—consequently, remains to be discovered.

This specification is another specimen of the blundering and careless manner adopted by too many inventors, who seem unaware of the deep importance of this document. In this case, several parts of the machinery, or apparatus, illustrated by the drawing, are not marked with the proper letters of reference, as mentioned in the specification. In some cases, there are no letters of reference whatever placed upon parts referred to in the specification, one passage of which is very remarkable. After describing the arrangement of the brushes upon a cylinder of India-rubber, the inventor states, that the effect produced by such arrangement will be as follows:—"The brush, in ascending the chimney, will collapse; and the reverse will take place in ascending," by which the downward movement only will bring the brush into action. This is evidently an error on the part of the person employed to engross the document; but does not excuse its being placed on the Rolls in such a state.

The fig. 2 exhibits another improvement, which is calculated for sweeping or cleansing horizontal flues of furnaces, &c. A marks the tube, B, the brush; C, one of two wheels, mounted upon an axis, which is placed within two inclined slots; D, a short brush, or scraper; E, an elastic tube, formed of a bundle of strips of whalebone, surrounded by vulcanised India-rubber. The effect of this arrangement is as follows:—Upon introducing this apparatus into the flue, the wheels, resting upon the bottom thereof, will cause the inclined slots to be moved upwards upon the axis on which the wheels are mounted, by which the top side of the brush will be forced against the top of the flue, and, as it is moved forward, will cleanse the same. A reverse or backward movement of the machine will cause the inclined slots to descend upon the axis of the wheels, by which the brush will be lowered, and thereby effect the cleansing of the bottom of the flue. The remaining arrangements consist in the application of air-tight vessels of India-rubber, around which the brush is disposed; and, after such brush has been passed up the chimney, or flue, the inventor proposes inflating the said vessel with compressed air, which he effects by means of an air-pump—the said vessel being furnished with suitable valves. This forms rather an amusing apparatus, as its practical adoption will either render it necessary that the "knight of the brush"

shall provide himself with an air-pump—the use of which will, probably, exceed the scope of his knowledge—or that the tenant of every house in which it is to be used, shall have a pump, other than the usual domestic appurtenance—a cold water pump—in which latter case a liberal discount for sweeping ought, of course, to be allowed. The patentee has set forth no specific claims to the invention.

Patent-office and Designs Registry, 210, Strand, Nov. 10.

IMPROVEMENTS IN RAILWAY CONSTRUCTION.

[Charles Fox, of Trafalgar-square, Charing Cross, engineer, and John Coop Haddon, of Upper Weburn-place, civil engineer, for Improvements in Railway Chairs and Switches, in Trenails or Fastenings, and in Machinery for preparing Railway Sleepers. Patent dated Nov. 8th, 1847.]

This invention comprises four distinct improvements: the first of which relates to railway chairs, and consists in forming the same in the following manner:—The under side of the chair has a projection, or stud, formed upon it, which is intended to take into a recess formed, as hereafter described, in the wooden sleeper upon which it is to be placed; the taper holes in this chair, intended to receive the trenail, have their extremities rounded, by which injury to the trenail is prevented; and certain means whereby these chairs may be formed in moulds, and by which the rounded parts of the holes, before mentioned, may be produced, are set forth in the specification. The second of those improvements relates to railway switches, to be employed at those parts of a line of railway where there are sidings; and such improvements consist in arranging and actuating the switches, so that they shall move vertically, instead of horizontally, as hitherto. This is effected in the following manner:—In contact with the inner edge of that rail, which forms the siding, there is placed a taper piece of metal, which the inventor calls a tongue rail; and such rail is maintained in a proper position by a piece of metal of the length of this tongue rail, and placed at such a distance from the siding rail as that the said tongue rail shall have free liberty of vertical movement between them and the chairs employed for retaining the siding rails, main rails, and pieces of metal which guide the said tongue rail in its proper course, are exhibited, by the drawings, as being peculiarly and suitably constructed for that purpose. In order to effect the raising and lowering of this tongue rail, there is a piece of metal placed at the underside thereof, to which are riveted wedge-shaped pieces; and such pieces are supported by, and move upon, inclined surfaces, formed, and suitably placed, for the purpose; and these wedge-shaped pieces receive motion from a lever handle, to be actuated by the attendant at this part of the line of railway, by which the said tongue rail may either be raised, so as to form a continuation of the main line, or be lowered, by which the course of the carriages will be diverted to the siding; and where there are two such tongue rails employed, one at each rail, the wedge-shaped pieces should be placed in opposite directions, in order that the lowering of one tongue rail may effect the raising of the other, so as to ensure the continuation of the siding, or main rails, as occasion may require. The patentees remark that, in cases where only one tongue rail is employed, they propose employing weights to keep the tongue rail in that position in which it is most frequently required to be used—the reverse position being effected by the means before described. The third part of these improvements relates to trenails, and consists in certain new self-acting machines to be employed for producing the particular formation thereof. The machinery exhibited by the illustrative drawings, annexed to the specification, are very ingenious, and appear well calculated for the purpose; but as such machinery only serves to exemplify the means by which these improvements may be carried into practical effect, and the description of it would occupy much space, we must refrain from giving it.

The fourth part relates to the preparation of railway sleepers, and consists in the employment of certain new and ingeniously contrived machines for recessing such portions of the sleeper as are destined to receive the chair before mentioned. The drawings exhibit a variety of cutting tools to be employed for the purpose, as also the means by which each sleeper is held in its proper position during such operation, and by which the distance which each chair should be asunder is preserved. The claims are separately set forth after describing each separate improvement; but, in general terms, are for the arrangements and combinations described and represented, and for the purposes set forth.

We regret that the length of this specification, which comprises six skins of parchment, and five sheets of drawings, prevents our going more minutely into it; but as the details would occupy a considerable space in this Journal, we must refer our readers, who feel much interested in the invention, to the document itself, at the Chancery Inrolment Office, Chancery-lane.

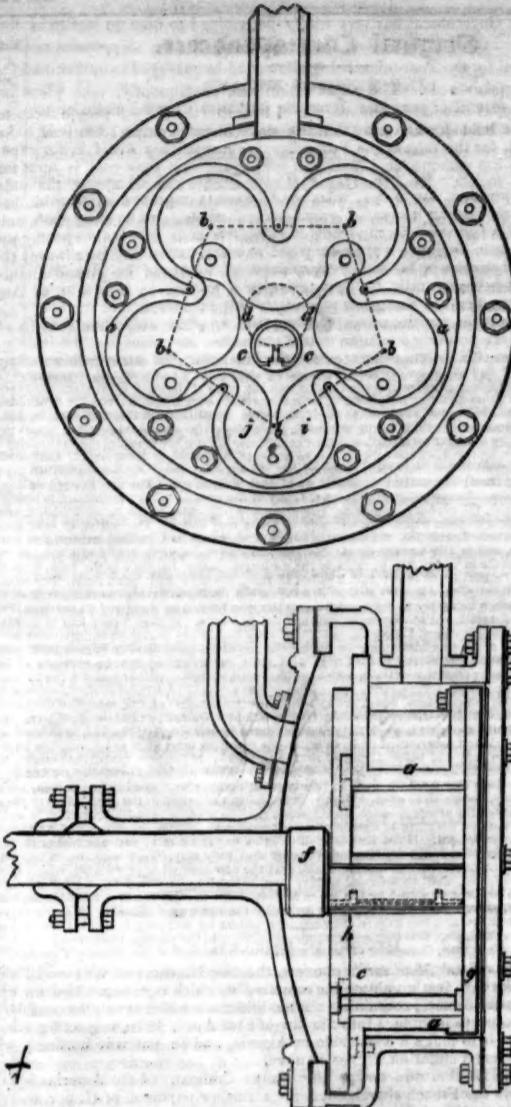
Patent-office and Designs Registry, 210, Strand, Nov. 9.

NEW MODE OF TRUSSING CAST-IRON GIRDERS.—Mr. Gibbons, of Coryn's Hall Iron-Works, has patented a new method of trussing cast-iron girders, in which the rigid trusses heretofore employed are abandoned, and elastic ones substituted. We will attempt to describe it, by supposing a girder of considerable length, formed of three sections, bolted together through flanges at the ends of each, in the usual manner. Mr. Gibbons now introduces beneath the centre section a powerful spring, made exactly similar to the bearing springs of railway carriages, with the convex side abutting on the girder; and wrought-iron truss-rods are fastened to each end of this spring, and bolted up tight to flanges, cast at the extreme ends of the two outer sections of the girder. Where the girders are of considerable width, a number of springs may be used, ranged side by side; or smaller springs may be used, and placed two together, with their concave faces inwards, one under each joint of the sections of girder, and one in the centre, trussed up tight by suspension rods. The springs should, of course, be tested previous to being fixed, and should be allowed but little play; perhaps, half-an-inch would, in nearly all cases, be sufficient.

WROUGHT-IRON GIRDER BRIDGES.—Mr. Fairhairs, of Manchester, who, it will be remembered, made, in conjunction with Mr. Eaton Hodgkinson, those numerous experiments on the strength of sheet-iron tubular girders, which confirmed the confidence of Mr. Stephenson in his plan for bridges of this description over the Conway River and the Menai Straits, having erected a tubular girder bridge on the Blackburn and Bolton Railway, we are now enabled to describe it. During the experiments, it was ascertained that the strongest form of hollow girder was the rectangular; the thickness of the top plate, in proportion to the bottom, should be as 5 to 3. It was also found, that the relative strength of a tube thus formed, with the thickest plates at the top, and reversed, with the thickest plates at the bottom, were as 82 to 37. The bridge under notice is 66 feet long, having a clear 60 feet between the bearings. There are three girders, two forming the parapets of the bridge, and one in the centre, between the two lines of rails; they are formed with top, bottom, and centre cells—the latter being about double the height of the two former, which are, however, wider than the centre one, projecting on each side. The thickness of the plates is half-an-inch for the sides and top, and three-eighths of an inch for the bottom, the whole firmly riveted to angle iron. The cross beams may be constructed of either cast-iron, wrought-iron, or wood, as may be considered most desirable; they are bolted and screwed up to the projecting parts of the bottom cells by means of strong iron straps, and to the top by a long vertical bolt, passing through all three cells, and fastened by screw nuts on the outside. In testing the weight which this bridge would support, three locomotive engines, without their tenders, each weighing 20 tons, were coupled together, and which just covered the bridge from end to end. They were made to pass over at rates of speed varying from 5 to 20 and 25 miles per hour, which, without any perceptible difference at the different rates, caused a deflection of three-tenths of an inch. Wedges, or incline planes, were then laid on the rails, allowing the engines to fall suddenly 1 in. and 1½ in. respectively, at a velocity of 8 or 10 miles an hour, when the deflection in the first instance was .035 of a foot, and in the latter .045, or nearly half-an-inch. So far the bearing powers of this bridge are perfectly satisfactory.

IMPROVEMENTS IN BREAKS.—A patent has been obtained for a new description of break by a Mr. Tibbett, which acts as a drag on the wheel, at the same time as the break block is pressed down with great force upon the rail. The break is suspended between the wheels from a strong bearing spring, which always keeps it away from the wheel and rail when not wanted. It is completely under the command of the guard, being acted on by powerful levers, which act on a flanged wheel, or barrel, placed in the centre of the axle, which has a spiral thread cut on its surface, into which cogs, or teeth, on the under sides of the levers, take, and prevent the spring from pulling up the break block, as long as it is necessary to keep it in action.

GALLOWAY'S ROTARY STEAM-ENGINE.



The uniform failure of every attempt heretofore made to produce an efficient and economical rotary engine, has induced a natural and very general belief that it is a mechanical impossibility. It is, therefore, to be expected that the announcement of every new rotary engine should be received with much of doubt and scepticism; but, if it can be established that this new attempt differs in *toto* from all its numerous host of predecessors, it may at least be claimed for it that it is entitled to calm consideration, since former failures furnish no arguments against the efficiency of this particular engine; and still more, as emanating from a person whose experience in rotary engines is known to be considerable.

DESCRIPTION OF THE INVENTION.—The figures are sections of the engine. It will be seen, by fig. 1, that the engine consists of a fixed vessel, A, which performs the office of the cylinder of an ordinary engine; the form is obtained by striking segments of circles from the centres, b, b, b. The fig. c, which may be called the piston, is struck from the same centres. Now, if the centre of c be compelled to move in the path of the dotted circle, d, d, each of the arms will successively assume the position, e, and cavities (as i, j), formed by the contacts of the segments, will be successively enlarging and contracting—thus forming recipients for the action of the steam by apertures through the ends, not necessary to be shown. By fig. 2, it will be understood in what manner the motion is communicated to the machinery; f, is a crank—the pin of which is inserted into the centre of the piston, and is, consequently, carried round with it. It will be seen, as the segments move, the tangents to the points of contact are always parallel to each other; and that the wear, both of the fulcrum and the piston segments, must be uniform. The contact of the segments is ensured by a spring, placed in a groove in the crank pin; this, however, is only useful at starting; the centrifugal action producing contact when the engine is running. To preserve the flat ends of the piston and cylinder steam-tight, the plate g (fig. 2) is bolted to the cylinder, and the plate, h, to the piston; the wear, therefore, between the flat surfaces is equal—that is to say, as the surfaces of the piston and end plate wear, those of the cylinder end and the plate, fixed to the piston, wear also—and thus the contact between the flat surfaces is preserved. It will be seen, that the number of arms may be varied. The diagrams represent the experimental engine. An engine, of about 4-horse power, has been constructed and tested in various ways—namely: at the Great Western Railway engineers' shop at Paddington, where, as an experiment, it was employed to drive the lathes, and other machinery, during the repair of the company's own engine; at the workshop of the Earl of Orkney, Taplow Court, Berks; and, lastly, on the premises of Mr. Tyrrell, engineer, at Deptford, where it is now employed to drive a fan-blower, which is calculated as requiring from 4 to 5-horse power.

By these experiments (which have been made and witnessed by competent persons, selected as having no interest in the result), the following facts have been established:—1. The engine is absolutely steam-tight; this fact at once places it advantageously in contrast with other rotary engines. 2. Its motion and power are perfectly uniform at all velocities. 3. The number of revolutions made in a given time do not sensibly affect the power. 4. The rubbing surfaces prove the absence of any perceptible wear, rather indicating a correcting than a deteriorating action. 5. The consumption of water is exceedingly small, proving that, in consumption of fuel, it is economical, as compared to the reciprocating engine.

The possession of these qualities call for serious attention. The great prime movers of the day—the driving-wheel and the screw—demand a velocity in the piston never dreamt of by the early engineers; and this increase of velocity is admitted to be followed by a loss of effect, which does not occur at the ordinary speed of the piston. An engine, therefore, which conforms to the required increase of velocity, without any loss of effect—or which can, in other words, make 400 revolutions in the time the reciprocating engine makes 200 revolutions, with the same rate of expenditure in fuel, power for power—will be admitted to be a desideratum of the first importance, and the full development of the properties of such an engine must be attended with a corresponding extension of the benefits of steam transit by land and water; nor will its advantages be confined to these applications of steam, but will be useful in all the various works where rotary motion is required.

The proprietors of Galloway's patent beg, therefore, to call public attention to what has been realised by this essay—meantime, other engines are making, and they (the proprietors) are ready either to undertake the supply of engines, or to grant licenses to manufacturers. The engine may be seen at work, by application, at the office of the proprietors, 13, John-street, Adelphi; or at the chambers of the patentee, 14, Buckingham-st., Adelphi.

WHAT IS MAN?—Man (says the *Cleveland Herald*, United States), is a reasoning animal, who paints with the sunbeams, travels by steam, and talks by lightning.

SIR,—circulated in silver sand and slender would be in the ties affected by man in logical United explore with her while she What contributed by science before them mining—

which way give weight as follows: phenson's were surprised between two Now, Sir, I of Mr. Brus straightfor which way close to connect simply to draw the teeth, lastwards of his matur respect, for exists in pure ship, &c., re 400 miles, w works, has a

Original Correspondence.

THE MINES OF IRELAND.

Sir.—In several of your late Journals, you have directed attention to the mines of Ireland, suggesting that national advantage might be derived, by applying public money to the extent of half a million for working those mines. Believe me, my dear Sir, that we in Ireland do not require public money for working our mines; what we do want is improved legislation, as regards the leasing powers of proprietors of mines, and equality with our friends in Cornwall, in the mode of rating mines for relief of the poor. Your readers in England will be surprised to learn, that a very large majority of proprietors in Ireland are restrained by an Act of the Irish Parliament (10th George I., c. 5), from granting a mining lease at a lower rent than one-tenth of the gross produce, which exceeds double the average rent payable for the mines of Cornwall, of which one-tenth (only two-fifths) are properly available to the proprietor in possession, the remaining three-fifths being reserved for the inheritor. In some instances proprietors and lessees, not being aware of this law, have arranged leases at lower rents than the law authorizes; but these leases being invalid may be cancelled, and no company or individual would embark capital in opening mines under the circumstances; whereas, if proprietors who are tenants for life, or under settlement, corporations, lay and ecclesiastical, &c., were authorized to lease mines at the value, agreeably to their powers for leasing land, the sound of pick and gad would gladden the hearts of our labourers in extensive districts, now depending upon Government gruel for existence. Another obstruction to the working of mines in Ireland has arisen from the mode adopted for valuing and rating mines for relief of the poor. The valuator for the district in which the mine is situated, and who sedulously further into a stone than the man who holds the pick, is directed to rate the mine for such sum as he thinks a solvent tenant could afford to pay as rent—a system which has produced the following occurrences: a mine was rated by the valuator for 10,000/- per annum, the alleged profits of the company working the mine, which produced a protest and appeal to the Poor Law Commissioners, who repeated their previous order to the guardians, who, nevertheless, adhered to the valuator's erroneous report; an appeal was lodged, and, prior to the hearing thereof, the guardians proposed to reduce the valuation one-half, which was submitted to, although in Cornwall the valuation would have been the actual rent payable for the mine (about 2000/-), and the rate thereon would have been paid by the landlord; whereas, in Ireland the company, were obliged to pay the rate on 5000/-, deducting from the landlord only one-half of the poundage rate on 2000/- These obstructions to mining in Ireland have, I understand, been brought under the notice of the Irish Government, in the hope that the law and practice here may be assimilated to those which prevail in England; and your friends and readers here rely on your valuable aid, in placing the subject before the public in your usual effective style, so as to elicit favourable consideration in Parliament, from whence alone we can hope for relief.—*Observer: Dublin, Nov. 4.*

MINING IN IRELAND.

Sir.—I have seen, with much pleasure, the deep interest excited by you, in the welfare of the Irish people generally; for, although your allusions are principally to the lower class of Irish, still the benefit of them will, in a much greater degree, benefit the higher classes; and, feeling, as I do, the motives by which you have been influenced, I will contribute, hand and heart, with my slender ability and knowledge of the country, to an object in itself so generous and praiseworthy. Ireland, taken as a whole, geologically speaking, is composed of granite, primitive clay-slate, conglomerate mountain limestone, and coal-measures. This island contains a greater proportion of limestone than any other part of the United Kingdom; and the stratification extends from Dublin to Limerick, with the exception of five or six miles of clay-slate, which is crossed on the road at Bird-hill, three or four miles from Naenagh, and 10 miles from Limerick. This limestone rock, or slate, then extends 10 or 15 miles southward, towards Cork, where it meets the clay-slate; then from Limerick to Clare and Ennis, and northward as far as Galway, bordering on the north coast for a great extent, joined on either side by the clay-slate, which, on the coast north-east, around through Monaghan and Armagh, where the limestone comes in, which extends on the south coast as far as Dublin; then comes in the granite for some miles, taking an oblique direction through the county of Dublin into Wicklow, forming the "Sugar Loaf Mountain." Several lead mines, in the foot of this mountain, have been found, and profitably worked in ledges, in channels of mica, running through the granite. The celebrated mines of Wicklow and Waterford must be well known to all miners residing in that country, as also the abundance of labour afforded—the many thousands supported and fed by them, as also the small capital invested in the first instance, and the handsome profits paid to the adventurers in them. No man, with slender knowledge of this, can but regret the want of capital and skill in developing the mineral wealth, which, for a certainty, lies hidden in many places, taking the country on the south coast, all the way from Dublin through the county of Cork. Again, the county of Galway abounds on the north-east coast with primitive clay-slate, filled with mineral veins, which is usual in such rocks. I have often taken from them the finest specimens of lead ore. The same will hold good through the whole of the north; occasional rich bunches of lead ore have been found in the limestone, in the county of Clare; and mines, very rich in silver, have been found, and are still in course of being worked.

The "Shalee Grin Mountain," Tipperary, contains many veins of lead, rich in silver, so far as they have been worked, yielding a return of many thousand pounds, nearly paying the cost of working. Having now spent my slender thread, on the outline of geology and mines in the Sister Isle, I would solicit, most earnestly, the co-operation of friends, as miners residing in the country, for such information as their situations and opportunities afford them, without the least interference with their employer's business or matters; this may be fairly asked, as being the duty of every man in the present trying crisis. Had Ireland been situated, with its geological features, in South Australia, in New Zealand, or in Canada, or the United States, there would, I think, be plenty of people to speculate, to explore it properly in a mining point of view; but poor Ireland is left, with her dying and scarce population, to slumber—the means of subsistence and even comfort being hidden within a few fathoms of the surface, while even the surface soil is starved for the want of its development. What could the Government of this country, who have so generously contributed to Ireland, now do, better than to have the whole country searched by scientific and practical miners, and have fair and honest reports laid before them, of the probability of employing the poor from the source of mining.—*A WELL-WISHER: Nov. 4.*

THE MIXED GAUGE QUESTION.

Sir.—I trust you will permit me, through your valuable and widely-circulated paper, to make a few remarks, in answer to an article, which appeared in the *Morning Herald*, respecting the mixed gauges, on the opening of the Gloucester and Cheltenham Railway. It appears, that rotten "monopolists" and "eccentric characters" may find their causes strongly defended by your contemporary—in fact, its columns appear almost devoted to such purposes; and it has certainly maintained its character, in trumpeting to the world Mr. Brunel's mixed gauge delusion. In order to give weight to their assertions, the writer of the article in question states as follows:—"We walked over Mr. Brunel's arrangement with Mr. Stephenson's report in our hand, and, from the simplicity of the system, we were surprised that there should be any existing difference in opinion between two such scientific gentlemen as Mr. Stephenson and Mr. Brunel." Now, Sir, I cannot imagine how the extravagant notions and confused ideas of Mr. Brunel, can at all be brought into a comparison with the practical and straightforward engineering proceedings of Mr. R. Stephenson—and, in which way your contemporary makes the scientific comparison, I am at a loss to conceive. I will not detract, nor yet listen to what detraction utters; but simply investigate Mr. Brunel's proceedings, and leave it to your readers to draw their own comparison. Mr. Brunel, on Parliamentary Committees, last session, proposed to introduce the double gauge system on upwards of 400 miles of railway. Can Mr. Brunel, after finding the fallacy of his matured broad gauge system, entertain the least consideration, or respect, for the shareholders of the Great Western Railway, when he persists in pursuing such erroneous propositions? It is evident, from Mr. Brunel's own statements, that the extra cost of the land, materials, workmanship, &c., required for the broad gauge, averages 3500/- per mile—say, for 400 miles, will show, 3500/- × 400 miles = 1,400,000/-, which sum, for extra works, has already been squandered away. The second additional outlay recommended by this "eccentric" gentleman, is 400 miles of railway on

the double gauge system, at a cost of 5,974/- per mile, will require—5974/- × 400 miles = 2,389,600/-—so that, in addition to the 1,400,000/- expended, he now proposes that the company should lay down the double gauge for 400 miles in length, at a cost of 2,389,600/-; and which, when completed, would be only equal to the single gauge, and not capable of doing one-tenth more work. Again, taking the extra capital already expended for the broad gauge, and the capital required for the mixed gauges, together amount to 3,789,600/-, which sum (assuming the average cost of the English railway at 20,000/- per mile) would complete 189 miles of railway on the narrow gauge principle.

Such are the engineering achievements of Mr. Brunel, which are trammeled to the world by the "broad gauge" mouth-piece, the *Morning Herald*. If Mr. Brunel, and the directors of the Great Western Railway, find that it is requisite, and to the direct interest of the company, to harmonise with the narrow gauge companies, why not acknowledge their blunder, and at once alter the 400 miles, already constructed, to the narrow gauge, and which would only cost about 800/- per mile, or 320,000/- for the whole distance; and of the two great evils choose the least? But, no; Mr. Brunel's ambition will not permit him to submit to such a course. Much rather would he deprive the shareholders of their last shilling, to gratify his extravagant and complicated projects, than propose an honest straightforward course, which would give universal harmony to railway workings, and relieve the Great Western Company from their present perilous dilemma. Mr. Editor, having laid these few observations before the public, I invite Mr. Brunel to refute the above statements, if he can; and I should also like to see in what manner the *Morning Herald* can now compare Mr. Brunel's engineering abilities with those of Mr. R. Stephenson's, M.P.?

London, Nov. 11.

CIVIL ENGINEER.

METALLIC PISTONS—GOODFELLOW, MATHER, AND SPILLER.

Sir.—My attention having been attracted by the metallic piston advertisements in your valuable Journal, likewise the statement which appears in your last Number respecting one of them, I beg to offer a few remarks upon the subject. The advertisements alluded to, are Mr. Goodfellow's, of Hyde, and Messrs. W. and C. Mather's, of Salford Iron-Works. My object is not particularly to discuss the good and bad properties of these inventions, but it is in justice to others of inventive genius, who have laboured to improve and perfect that important piece of steam-engine—the piston, and who ought, and must participate in, and have their share of honour, if not of profit, for their trouble.

Mr. Goodfellow distinctly claims, as the important feature of his invention, the vertical and lateral pressure—or, in more homely terms, the upward and downward pressure—against the top plate and the surfaced part of the piston block, and outwards to the cylinder. Now, I beg to state that this novelty does not belong to either Mr. Goodfellow, or his antagonists, Messrs. W. and C. Mather. If not the first, I can say a previous, inventor to Mr. Goodfellow, is one of our most talented and respected engineers, Mr. Spiller, M.I.C.E., of Battersea; and I believe, in more instances than one, the fruits of his inventions have been taken to market by others. Mr. Goodfellow, in his advertisement, calls the attention of the public to the trial, in the case of *Goodfellow v. Barker*, tried in the Exchequer Court, September, 1846; and how he established, for a second time, his claim to the piston, possessing the two properties alluded to—how he can claim the originality of this, puzzles more than myself. I was in court on the occasion of the trial, from beginning to end of proceedings, and saw Mr. Spiller produce a piston that had been at work in one of his engines, also possessing the same properties. That you may see I am conversant with the subject in question, which is beginning to excite the greatest interest amongst engineers in general, and also for the purpose of bearing out my remarks, I will give a brief description of the different pistons.

Mr. Goodfellow's is composed of three annular rings of a bevel form, or, to all appearance, similar to a length of square bar-iron split down the centre across the corners, or like a solid piece of angle iron. This is turned into a circle, or ring, forming a bevel from the inside—two of which compose the outer rings. The inner spring, or double cone, may be imagined as another ring of nearly alike form, turned into a less diameter, and placed between the two rings presenting its two corresponding bevels to the bevels on the outer rings, and, being compressed together by the top plate gives it the compound elasticity he states it possesses: he has, likewise, introduced some very ingenious contrivances—such as saw cuts irregularly divided round the outside of the double cone ring—for the purpose of giving it elasticity, which, otherwise, it would not have.

Messrs. W. and C. Mather's piston possesses both vertical and lateral pressure—each property acting separately, and not combined, as in Mr. Goodfellow's. The packing of this piston is an helix, or peculiar cut spiral, encased in another one a little different in form, as regards the pitch at which it is cut: it has flanges inwards, so that at the vertical spring, or pressure, of the inner helix will act upon it. The principal feature of this piston, I believe, is, that both the outward and vertical elasticity is given it whilst in the workman's hands, which it is impossible to alter afterwards, either by screwing down the top plate, or by any other means.

The inventors contend that this piston has no more pressure, or causes more friction, when new, than after working five or ten years.

Respecting the third (Mr. Spiller's) piston, its block has two grooves, or recesses, turned into its diameter, to receive two sets of segments. These are ingeniously expanded outwards by small springs likewise, upwards and downwards; in addition to this, he cleverly introduces steam to assist the springs, by pressing the segments in a vertical and lateral direction; the steam so introduced, is prevented from passing the piston by the segments, forming a tight joint on the middle surface of the block. If this is not a piston acting vertically and laterally, I really cannot pretend to say what is—in fact, this was admitted in court on the occasion of the trial, by judge and jury, and all the eminent engineers present. Mr. Spiller proved that he fitted engines into steam-boats using this piston, three or four years prior to the date of Mr. Goodfellow's patent.

I am much surprised that Mr. Goodfellow should lay claim to a novelty which has been satisfactorily proved to have been the invention of others, supposing his invention to have been original on his part, I think he might have been contented with the extraordinary patronage bestowed upon him, according to his advertisement. It being my wish and desire to see every mechanical invention stand purely on its own merits, I have carried my remarks to a greater length than I originally intended to do, for which, Mr. Editor, I beg to apologize.—J. HUNT: *Kennington Oval, Nov. 9.*

IRON GIRDERS BRIDGES.

Sir.—The question of the strength and stability of rigid iron bridges for railways, is one which is causing much interest, among not only engineers, but all parties officially connected with railways. In consequence of the failure of a few girder bridges, on a plan, the adoption of which is of modern date, an opinion seems to be gaining ground, that they are dangerous *per se*, and ought to be abandoned; and that the trussing cast-iron girders, with wrought-iron stays, is wrong in principle, and worse than useless. Now, Sir, it can be clearly shown, that there is no other material so applicable to trussing cast-iron girders with good effect; and, if a proper principle is adopted, a girder, which, in itself, is totally unfit to support a certain weight, can be rendered perfectly efficient by wrought-iron support. The principal objection to the use of wrought-iron trusses to cast beams, or girders, is, that the two metals expand and contract in different ratios at the same temperature. Now, this property, I contend, may be made available to the most successful results, in precisely the same manner as the compensating pendulum of a clock, made of alternate bars of steel and brass, which, expanding in different degrees by heat, act as a check on each other, keep the pendulum invariably of nearly the same length, and produce the most uniform motion throughout the works. I should be glad to hear some of your correspondents on bridge-building give their reasons for objecting to the union of the two metals.

A. Z.
High-st., Southwark, Nov. 10.

AERIAL NAVIGATION.

Sir.—Thanking you for your favourable notice of my pamphlet on the subject of aerial navigation, in the last Number of your valuable paper, I may observe, that there is one point I think you overlook in the project—that the buoyant power of the gas is not expected to render any material assistance; and, therefore, its gradual exhaustion will not greatly affect the flight—in fact, the gases best adapted to the purpose, are nearly equal in specific gravity to atmospheric air—olefiant gas being 0.97, and oil gas 0.9. Then the diminished surface, opposed to the air in its progress, when the gas is withdrawn from the balloon, will, probably, more than compensate for the loss of buoyancy. Whether the explosions are objectionable I must leave to your mature consideration; but I fear they cannot be dispensed with.—*DAEDALUS BRITANNICUS: London, Nov. 9.*

Mr. SWEETLOVE ON THE VENTILATION OF COLLIES.

Sir.—Having taken care that Mr. Sweetlove's chairman, at Liverpool, should be furnished with one of the pamphlets, referred to in my letter of the 13th ult., I felt surprised that Mr. S. should not, in your last week's paper, have supported the principles involved in his lecture at that place. He does indeed write a letter upon the 20th October, wherein he seems to imply, that his name ought to carry with it so much veneration, as to preclude his published sentiments from criticism; but if practical men are considered fair game for the criticism of philosophers, then why not philosophers be subjected to the tests of practice? With these remarks, I will pass over the introductory preface of his letter, regarding Mr. Ryan, Sir J. Sinclair, Mr. Buddle, the Liverpool Polytechnic, and Dr. Faraday, because they have nothing whatever to do with the subject.

Mr. Sweetlove, as a public lecture, promulgated a theory, which practical persons pronounced erroneous; and, surely, he should defend it, or admit that it is indefensible. Certainly, he ventures, in a small degree, by saying, "I cannot acquiesce in the opinion, that my proposed induction pipe, instead of conveying the gas from certain pot holes, would at once be filled with the general air of the mine, because the hydro-carburetted gas to be removed, has a specific gravity of 0.95; that of air being 1." This levity of the former, would cause it to occupy the higher part of the passages, and flow onward with the general current in a district superstratum, with no more admixture than that arising from its diffusiveness." Now, here again, without meaning any offence, I would recommend Mr. Sweetlove to visit a mine, where he would probably discover a current of air sweeping along the face of the workings, at a velocity of 3 or 4 ft. per second; and, notwithstanding his allegation, "as to the lightness of gas," he would discover the carburetted hydrogen streaming out at every pore of the coal, and admixing with the air current, not in a distinct superstratum, but so fully, and amalgamating with the general air, as to render it impossible to collect it "in pot holes, or otherwise;" and, further, supposing it could be so collected, I again say, that pipes would, by the law of Nature, be filled with the air of the mine from the exterior parts of the workings, including, of course, the gas—such air hurrying out to the nearest possible outlet, and leaving the interior pot holes unaffected. As for the funnel openings, they mean nothing at all; no mere air can enter the funnel than can pass along the pipe. He says, "No notice is taken of the pipes for draining the goaves;" I repeat that, without complete insulation, he cannot apply pipes to the goaves, for the reason before alleged, and the ordinary goaves cannot be insulated. A blower in a single drift—such as Mr. F. Smith has written about—has been frequently piped away, being first dammed up; so may a set of goaves, if a drift, or a pair of drifts, through a barrier of coal can be had, wherein to insert dams; but I again repeat, without the slightest intention of offending Mr. Sweetlove, that he is mistaken, if he fancies that such piping can be effected in ordinary goaves, or in ordinary air-courses. Truly, we practical men have been so much accustomed to see incoherent theories broached, regarding the ventilation of mines, that we have long since ceased to bow implicitly to the suggestions of individuals, however highly gifted they may be, without first testing them; and the concluding part of Mr. Sweetlove's letter proves still more clearly how dangerous certain of these theories are to follow.

If the plan (says Mr. Sweetlove) is admitted to be the only effectual one, as I believe it is in principle, the expense of carrying it out does not form a legitimate element of the question. Although economy of production is to be considered in every process of manufacture, no comparison can be instituted between the value of money and that of human life." We are now testing whether Mr. Sweetlove's plan "is the only effectual one." Messrs. De la Beche and Playfair had all the benefit of Prof. Faraday's piping system, and they did not venture to pronounce it "the only effectual one;" and it was synonymous with that of Mr. Sweetlove—but what has gained for them the compliment, which Mr. Sweetlove seems to envy, is, that after having made many practical investigations of dangerous collieries, after recent explosions, they expressly concluded that "no general plan would apply;" but they did not hesitate to declare, loudly and significantly, "for a good and effective ventilation"—albeit, that it was "only a careful carrying out of the old plans of ventilation." I shall conclude, by regretting that Mr. Sweetlove should have taken anything amiss in my former letter, as it was far from my intention to give any offence.—D. Newcastle, Nov. 9.

THEORY OF THE NATURE OF CARBURETTED HYDROGEN.

Sir.—I have often been amused at the confident and dogmatic style in which the communications of your correspondent, T. Deakin, of Blaenavon, are written—while, at the same time, he is often in error as he is correct. In his letter in your columns of last week, he, in his usual style, abuses "Sweetlove" and "Hibernia," as the most ignorant of men, because they have given an impartial and candid opinion as to what they consider the best means of preserving life in collieries, and, at the same time, rendering the workings more economical to the owners. In finding fault with the letter of "Hibernia," in the *Mining Journal* of the 23d ult., he completely misrepresents him; he attempts to make out that "Hibernia," in his letter, stated that the coal beds in their natural state must necessarily be continually giving out carburetted hydrogen, and thus become deteriorated. Now, Sir, it is quite clear to me, that "Hibernia" perfectly understood the subject he was writing on, and his observations on the volatility of carburetted hydrogen gas are perfectly correct; he says, "coal is porous or crystallised, those pores contain gas, they continue to generate gas, and if that gas is allowed to escape, in a great length of time it would reduce the seam to little better than dust and dirt, the pores are in continuity, and the gas will creep through them on an incline plane, until it meets with some stoppage or dislocation, as a fault or dyke, at which point the greatest amount of gas is found, and the greatest precaution necessary." Now, although "dust and dirt" are, I confess, hardly proper terms for decomposed coal (for such it would be), will Mr. Deakin deny that coal, long exposed to the atmosphere, loses its hydrogen, and becomes dry and effervescent, burning with less flame, and giving out less heat; if he had ever seen and used coals after a voyage to the East Indies, he would acknowledge such was the case—indeed, in his own peculiar and quaint style, he tells us, that "the coal is formed in basins, that the great body may be kept full of water, which is its great preserver"—thus acknowledging, that if the coal was not full of water, it would not be preserved, and supporting "Hibernia's" position. The fact is, Mr. Editor, your correspondent is an old man, brought up in the old school, wedded to old notions, out of which you must not expect him to be driven—obstinate withal, and half a century behind the age; what he lacks in scientific knowledge, he makes up for in undeserved abuse; and, like the generality of persons, who embrace ill names. I would advise Mr. Deakin, if he wishes his practical information to be read with a view to instruction, to confine his language to something like moderation, and not write under the illusive fancy that he is better informed than all the rest of the world on the subject of collieries, because he happens to be a collier. On some subjects on which he has had the temerity to write, such as geology, the nature of the gases, &c., he had in future better be silent, as discovering an ignorance thereon which there is certainly no occasion to expose.

Blackburn, Nov. 9.

CARBONIENSIS.

MR. RYAN'S THEORY.

Sir.—Mr. T. Deakin is hard upon your correspondent's allusion to the coal-field of the Forest of Dean. That remark is a quotation from a letter, in your Journal, by me in April or May last; I must, therefore, take the burthen of his censure. I then adduced the co-existent absence of faults and gas in this coal-field, in support of the correctness of Mr. Ryan's theory. Mr. Deakin's inference, that coal under such an effect should fall to dust, is nearer the mark, perhaps, than he anticipates. Our most extensive and exposed vein, in some localities, so far approaches the state of dust, that a small fraction of anything, but small coal or slack, is extracted from the workings. In its best positions, it is a soft coal, falling quickly to pieces under carriage and exposure to the air; nor will Mr. Deakin's theory of the presence of water, ensure the presence of gas. This coal is bedded under 90 yards of sandstone rock; what amount of water this will furnish, Mr. Deakin's experience can easily answer. The facility of pumping the water, Sir Thomas Phillips and other capitalists, who have made the attempt, can record. This coal has the most water and the least bitumen of our veins. It becomes more bituminous *always* near such slight imperfections of strata as compose the maxima of our faults. The upper veins, which lie closer together, and less exposed to water, are bituminous caking coals; but in none is there evolent gas. The utmost we know even in these bituminous workings, consists in a few bubbles of inflammable air arising in the workings, when the deposit is stirred. It is quite true, there is good coal in the Forest of Dean; I should be sorry if it were otherwise. For some purposes, its defects are an advantage; but no

person who has burned the coal of the faint-abounding Staffordshire, and that of Dean Forest, in the same grate, but will fully appreciate the expression, that the latter "is correspondingly of a poor quality." I am sorry to learn, Mr. Storey's experiment with Mr. Darlington, has not issued in success. We all know what a wide region lies between the invention of a machine and perfecting it; but I had hoped, from the solidity of Mr. Storey's correspondence, that his machine was perfected. I ought, perhaps, to add, in justice to Mr. Deakin, that the above vein has always yet been worked by level. We know nothing what it may become at greater depths, where its immense yield of water has hitherto overcome the attempts to work it.—DAVID MUSHET: Gloucester, Nov. 9.

FOREST OF DEAN COALS.

Sir.—To enable "Hibernia" to correct and to accommodate his theory of the decomposition of coals, to the evidence afforded by actual trial, I may state, that the forest coals are of peculiar excellence, and that large quantities are shipped at high prices, consigned to his own Emerald Isle. The forest coal, called Parkend High Delf, is acknowledged to equal, or even surpass, the Ell coal of South Wales, for steam purposes. The forest coals supply a large portion of the consumption for fuel of Gloucester and Cheltenham, and sell there at a higher price than the Derby, Stafford, Welsh, or Shropshire coals. Cold-blast iron, made with forest coke, has been sold for 7*l.* per ton, and successfully applied to purposes for which charcoal iron was formerly essential. The forest coal, called Coleford High Delf, produces a gas—the intensity of the flame of which is 17 per cent. greater than that produced by the finest Newcastle gas coals—that is to say, the illuminating power of the former, is to that of the latter, where the jet of flame is of the same size, and supplied by equal quantities of each gas, as 100 to 117. So much for the theory of "Hibernia," as applied to the forest coals. Can "Hibernia" inform me, whence the vegetable creation derives its supply of carbon? From the atmosphere, no doubt, in the first instance; but how is the supply kept up, when the demand is so enormous and increasing?—whilst the atmosphere contains only about $\frac{1}{4}$ part of carbon—so that every ton of charcoal must have exhausted the carbonic acid from 3000 tons of atmospheric air during its growth—for trees gain all their carbon from the air, and none from the soil, the mould of woody districts being rich in carbon, in proportion to the time during which the surface has been overgrown. R. MUSHET.

Coleford, Nov. 9.

ADCOCK'S SPRAY PUMP.

Sir.—In Mr. Adcock's letter of the 30th October, he states his intention of giving the working details in your next Number—viz.: that of 6th November—notwithstanding this invention, which has been fully carried out, Mr. E. Dumbell rushes forward with a demand for these very particulars, just as though Mr. Adcock had been either unable, or unwilling, to redeem his promise. Mr. Dumbell is puzzled to understand why there should be any power expended, or lost, in compressing air for the purpose of raising water, than in creating and destroying the moments of heavy pump-rods, and, likewise, the attendant friction of the various lifts, &c., the weight of water lifted, and the height to which it is raised, being in each case the same. The deeper the pit, the greater will be the mass of machinery to be set in motion, under the common pumping system; whilst on the system of the spray pump, no additional amount of *vis inertiae* is created to overcome, at an extra expenditure of motive power, when the depth of the pit is increased. The friction in the down and upcast pipes will only be enormous when the diameters of those pipes are improperly proportioned, to their lengths, and to the velocity of the air which is to pass through them. There is, of course, a discount upon the power employed on the spray pump; but it is a fixed discount, and not one which, as is the case with the common system of pumping, must be perpetually augmenting with the depth of the shaft. In the conclusion of his letter, Mr. Dumbell tells us, that mine proprietors are too wary to try anything new; and he then makes a poetical allusion to the *stern majesty of scientific truth*, which allusion flatly contradicts the former paragraph, for it intimates that a good invention will make its way; if so, why are flat rails used instead of round ones upon railways? and, why are unskillfully tubes of wrought-iron constructed at an unheard-of expense, preferred as bridges, to the cheap, elegant, and secure structure proposed by Mr. Motley? or why do the *eminent engineers* seek an increase of velocity upon railways, solely by augmenting the power and weight of their unwieldy locomotives, rather than by diminishing the friction and resistance to be overcome, by adapting the wheels and rails to each other, and by constructing the lines of rails themselves of a strength sufficient to avoid the trifling deflections of 1, 2, or 3 inches in a length of 6 feet, which now take place with the rails, under heavy engines of 30 tons and upwards? Yet Mr. Dumbell says, there is nothing to fear from the blind opposition of ignorance and self-interest. Mr. D. himself, probably, has nothing to fear on this head: but the case is different with men of talent, who often see their inventions benefitting the very men who were the foremost to decry them.—ROBERT MUSHET: Coleford, Nov. 10.

ADCOCK'S SPRAY PUMP.

Sir.—The candid statement of Mr. Blewitt, relative to the practical trial of the spray pump, goes far to prove it to be a valuable invention for colliery purposes. It is very true Mr. B. could have had his pit down 30 fms. much sooner with a 30-horse engine and double bell cranks, but the merits and defects of the pump would have been unknown—the principal cause in delaying the sinking of the shaft seems to have arisen from the getting the water in the pit to reach the bottom of the spray pump. Why not have a single bell crank attached to the steam-engine, and have a short set of lifting-pumps (say) about 8 fms. in the bottom of the pit to sink with, and let an India-rubber hose-pipe carry the water down from the top of the lifting set to the bottom of the spray pump? The sinking would then go on till the top of the lifting set got on a level with the bottom of the spray pump, which would then have to be lowered to near the bottom of the shaft; when the sinking would go on as before, the only trouble required being the putting on additional pipes at the pit's top to the spray pumping set. Of course, when the pit was down, the short lifting set would be removed; by this way, as little or less work would be required than the other way, by putting in pumps, rods, backs, &c.; and no one, who has had the trouble and expense of these in a deep engine-pit, would dip their pen in vinegar to write down an invention which promises to lay these aside. I have assumed, that a 30-horse engine will pump as much water with the spray pump, as a steam-engine of the like power with the common pumps; but there is this great difference—this engine would be at her full power, and could not go 90 fms. further; while the depth an engine with the spray pump might, for anything we know, go the extra depth, and further. E. G.

ADCOCK'S SPRAY PUMP—CAST-STEEL.

Sir.—The names and opinions of those who contribute to a public Journal, are, as respects the former, a fair basis for eulogy or anathema, and, in the latter case, the proper objects of criticism. With the remarks, therefore, of Mr. Masson on my observations on Mr. Adcock's frost machine, I will not quarrel; but I cannot see how my regulation for the "modus in rebus" of Mr. Adcock's invention, can rationally diverge into a tirade upon steel. I have asked, and so have others, in vain for data from Mr. Adcock, upon which we might find a judgment upon the merits of the spray pump; and as I am unprepared to prove, from the data of actual experiments, made by my late father about the year 1815, on this very mode of lifting water in mines, that Mr. Adcock's invention of the commercial utility of the spray pump are vain; and that if he has really made experiments on its action, as we are led to believe he has, from the pretence of discolouration in the theory of the subject, as detailed in his Pamphlet, he must know, that the spray-pump is worse than useless, in comparison with the least efficient method of raising water otherwise, and every advertisement of public entitainment, a worthless deception.

I am so far from being satisfied with Mr. Adcock's reply and figures, as to feel annoyed at the most trifling shifts he has used to evade the questions—how many pounds of water were ever raised in a given time by the spray pump, by 112 lbs. of coal, used as a steam generating medium, and to what height? And what is the horse-power comparison between this duty and that of the ordinary pump, when no medium result is attained? Mr. Adcock either does not, or cannot, answer these questions. Now to my critic, Mr. Masson, I trust he will set us right on this subject. I believe Mr. Adcock had his own way in the experiments, and failed by the imperfection of his arrangements, in which were expressed no more inventive genius than in devising "The Spray Pump," which is a palpable realization of—

"Jack and Gill went up the hill,

To fetch a pail of water;

Jack fell down, and broke his crown,

And Gill came tumbling after."

Now, as we have in these stanzas the impersonations of two water-engines—Jack and Gill—which may represent the steam-boiler and cylinder of the prime mover, and the blast-cylinder and spray pump, the analogy is seen to be correct; and as Jack and Gill ought each to have carried a pail full, to have been working economically, so the double machine, in Adcock's arrangement, ought to be equally employed. Whilst engineers are doing all that in them lies to diminish the obliquity of prime motion, Mr. Adcock is trying to make the reverse popular, and Mr. Moshet is trying to help him. Nursery rhymes will become popular.

Mr. Moshet must neither expect us to deem him, nor think himself, to possess near the scientific condition of his late progenitor; and, although he may bask in the splendid memory of that individual, yet as mortal aristocracy is not hereditary, so he must not blazon me, when I remind him, that "his ancestor's virtues are not his," and incidentally tell him, that I could not see any thing worthy of note in an iconograph of his mind, evolved to my notice by a baronet, a few days ago.

With regard to Mr. Moshet's counter-swear, about smelting cast-iron in an air furnace, and his having done it, as I must admit the possibility of the thing, so I cannot rebut the assertion, but will add my testimony to that already given—that I smelted iron ore with the production of cast-steel, as far back as the year 1837, with an air-furnace, described in *Kosten Eisenhüttenkunde*. But Mr. Adcock did not prefer an ordinary air-furnace, but with a new idea, that wanted new appliances, he went to work with the old apparatus in miniature, and inflicted a too heavy burthen on his columnar draught.

If Mr. Moshet will fight his own battles, he will have enough to do; and I will tell him, in fine, that I would rather enjoy his acquaintance and friendship, as a reflection that existing between my parent and his, than rate, or be rated by him; and conclude by the assurance to the tolerant Editor of the *Mining Journal*, that I prefer to see his pages replete with useful information, than to enjoy the intoxicating luxury of his indiscriminate patronage of our *cancreas scribentis*.

Does Mr. Moshet think it possible, to smelt as much ore as will yield, in any case, a ton of pig iron, or pig copper, by the use of 25 cwt. of coal, and produce a ton of malleable bar iron, or refined copper, by the employment of 32 cwt. of the same coal. As I do not remember ever having written on the subject of the iron manufacture, and especially on the fabrication of steel in the puddling hearth, Mr. Moshet will excuse me, if I beg of him to draw my attention to the particular source of his remark on steel, in your *Journal* of November 6, as capable of exciting his surprise, if I succeed in making malleable steel from the puddling hearth, as else, how can I exchange ideas with him. I have a sample of steel so produced, but do not remember ever having placed any within the reach of Mr. Moshet's observation and criticism.

W. RADLEY, Ch. E.

ADCOCK'S SPRAY PUMP.

Sir.—The spray pump, being so peculiarly novel, and so wholly different to all previous systems of raising water, impresses the minds of those who have not seen it in operation with doubt, and of those who have with astonishment and wonder. Yet, if the mind be emancipated from the impressions thus produced, and be applied to examine, with a philosophical spirit, the principles on which the invention is based, all doubts of, and wonders at, its efficiency, will end. The science of mechanics is founded on this axiom—that a greater force will overcome a less. If, therefore, the weight of water dispersed throughout the length of the upcast-pipe be less per square inch than the pressure of the condensed air flowing from the blast-cylinder, the conditions of the law of mechanics will be fulfilled, and motion must ensue. That it was so, may be known by the following:—

The area of the blast-cylinder, at Llanhiddel, is 1964 inches, and the piston moved through 240 feet of stroke per minute. The area of the upcast-pipe is 113 inches, and its length 54 feet; hence, the quantity of air, at atmospheric pressure, discharged from the blast-cylinder, at Llanhiddel, during the times of the public experiments, was sufficient to fill the entire length of the upcast-pipe 773 times per minute.

For 1964 in. \times 240 ft. = 77,25 feet.

The air, however, was not discharged at atmospheric pressure, but was condensed to 4 lbs. per square inch; and, to compress it to that extent, the blast piston had to descend 78-100—78 of the length of its stroke, before the outlet valve opened—multiplying, therefore, 77-25 by 78, it becomes evident that, at Llanhiddel, the upcast-pipe was filled and emptied of its contents 60*0* times per minute; or, reflecting the fractional part, once in every second. In last week's *Mining Journal*, I had occasion to substantiate the fact, that the spray pump, during the times of the public exhibitions at Llanhiddel, discharged 1333 gallons of water per minute. Dividing the quantity, therefore, by the number of times (60), that the upcast-pipe was emptied per minute, it is shown that the whole quantity of water dispersed throughout the length of the upcast-pipe, at any one time, did not exceed 22 1-5th gallons. Hence, if collected together, in a solid state at the bottom of the pipe, instead of being dispersed in drops throughout its length, it would only stand to 4-54, or rather more than 48 ft. in depth; and as 54 ft. of water, resting on a base, 1 in. square, weighs 1 lb., the 48 ft. would weigh, or give a pressure equal to, 2 lbs. per square inch only. Hence, therefore, by these investigations, all mystery attached to the spray pump must vanish from the minds of the reflective; and to them it will clearly be perceived, that the principle of the invention is as simple, and "as unerring, as any received law of Nature can be."

The pressure of the air at Llanhiddel was 4 lbs. per square inch; the weight of water resisting its motion, 2 lbs.—consequently, by the law of mechanics, the greater force overcame the less. In your last week's publication, I stated, that the 12-in. upcast-pipes, now at Llanhiddel, are intended for the bottom of the mine, when it is sunk to its calculated depth of 200 or 250 yards. That, hence, under certain definite laws, the pipes will expand upwards to reduce the velocity of the effluent current; and that had the pipes been proportioned for the experiment only, a greater body of water would be delivered. Can anyone doubt this statement now? Reginald James Blewitt, Esq., M.P. for Monmouth, has done me the honour to state the fact, that when I removed the collecting cone from above the upcast-pipe, the water, from the impetus it had acquired, "was blown into the air," after it left the pipe, "to the height of 100 ft., or more." This tends to prove, that my object in a deep pit is, to give considerable velocity to the drops of water in the lower parts of the upcast-pipe; and thence, by certain scientific laws, to expand the upper part of the pipe, that the power imparted to give that velocity may be regained, by a diminution of the speed of the current current.

Some of the opponents of the spray pump have made remarks, very knowingly and very foolishly, on what they are pleased to denominate, the great friction of the column of air and water. If those gentlemen will refer to the three last pages of my pamphlet, I think they will perceive that I am not wholly ignorant of the subject-matter of discussion, and that I do not adopt proportions on spurious views, or by guess-work.

London, Nov. 12. HENRY ADCOCK.

ADCOCK'S SPRAY PUMP.

Sir.—The envy and malice which has been excited against Mr. Adcock's important invention—the spray pump—is, without exception, a disgrace to the nation and the age. From the uncourteous and sneering language of Mr. Radley, the self-styled "champion of truth," I am strongly impressed with the belief, that he must be a "champion of conceit and ignorance," and very little conversed with the subjects he has been trumpeting to the public. "A Newcastle Collier" strongly condemns the principles of Mr. Adcock's pump, although he acknowledges it had not seen it in operation; and, from the description he has given in his letter, I am inclined to believe, that he got his information from the landlady at the inn where he stopped during his visit. Sir, the whole correspondence which has been laid before the public on Mr. Adcock's invention (previous to Mr. R. Blewitt's letter, in your last *Journal*) has been sickening to every impartial truth-seeking person, and which is well pointed out by Mr. R. Moshet, in his letter of last week. But, Mr. Editor, let us change the scene, as this method of testing an invention is a disgrace to science, and let us assume a more business-like conduct.

Mr. Blewitt's description, in your last *Journal*, has certainly thrown some light on the subject; and I fully concur in his remarks, that the spray pump, in its present state of perfection, is not well adapted for sinking operations, as the pit must be continually immersed. Again, it is liable to be deranged, in blasting the hard ground with the gunpowder; yet, for stationary purposes, it may be far more efficient than the common pump. I, Sir, am a perfect stranger to Mr. Adcock; yet, from the manner in which he has been treated, every enlightened person, with a beam of feeling in his breast, will sympathise with a honest industrious man, struggling against the ignorant prejudices he has to surmount, in bringing forward his invention; and, Sir, with your permission, I propose that a subscription should be raised, in order fully to test Mr. Adcock's invention. Each coal and ironmaster, and all persons interested, should forward their mite—say, to the Editor of the *Mining Journal*. When a sufficient fund is subscribed, select a shaft, of 150 yards deep, where there is plenty of water; and then let the invention be tested by a committee of impartial scientific men, and the merits or demerits of the spray pump be laid before the public. I trust this suggestion will be heartily responded to, by all who have Christian feeling for an inventor, and the vituperative discussion quashed, and *et cetera* will be the result. C. E.: London, November 9.

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